THE Soybean Digest

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JUNE • 1959

VOLUME 19 • NUMBER 8

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Official Publication of American Soybean Association and Soybean Council of America, Inc.

HUDSON, IOWA

Vol. 19 June, 1959 No. 8

IN THIS ISSUE

THE SOYBEAN DIGEST

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Business, publication and circulation, Hudson, Iowa. TAylor 5-3296.

Advertising, Ewing Hutchison Co., 35 E. Wacker Drive, Chicago 1, Ill., ANdover 3-3042. Walter C. Elly, Inc., 70 E. 45th St., New York 17, N. Y. MUrray Hill 9-0372.

Published on the 10th of each month at Hudson, Iowa, by the American Soybean Association. Entered as second class matter Nov. 20, 1940, at the post office at Hudson, Iowa, under the Act of Mar. 3, 1879.

Forms close on 20th of month preceding.

Subscription rates—$3 per year; Canada and other members of the Pan American Union, $3.50, other foreign, $4. Single copies 30c. Subscriptions accepted from members only.

Refer all address changes, undeliverable copies and subscriptions to the Soybean Digest, Hudson, Iowa.

EDITOR'S DESK

. . . By GEO. M. STRAYER

U. S. HOST TO INTERNATIONAL SEED CRUSHERS For the first time in history the oilseed industries of the United States are playing host to the meeting of the International Association of Seed Crushers this month at Cannes, France. Ordinarily the meetings have been moved about Europe, with the country in which the meetings were being held serving as host. Because of the travel problems involved it was not possible to bring the meetings to the United States. The next best solution was for the U. S. trade to serve as host at a European point. Cannes was chosen.

Most of the segments of the trade in the United States have cooperated in excellent manner. Requests for funds were answered favorably, and requests to individuals to accept responsibility were graciously accepted. Growing recognition of the importance of the European markets for soybeans, soybean oil and soybean oil meal is evidenced by this cooperation.

We know the meetings will be interesting ones, and that U. S. efforts to host the affair will meet with success.

PICTURE CHANGING RAPIDLY The world fats and oils picture is changing in a manner which is not recognized by most persons, even in our industry. They are significant changes, and can have far-reaching effects.

General levels of earnings and thus of buying power are moving upward in most countries. One of the first commodities to be in greater demand when the income level rises is edible fats and oils. It is happening in the countries of Europe, of Asia, and on every continent. We tend to look at past consumption figures and regard them as maximum figures. They definitely are not. The demand figures are going to move upward rapidly.

Stockpiles of fats and oils and oil-bearing materials around the world have moved downward. Those stocks are going to have to be replaced. That means demand above and beyond actual consumption figures.

Indications are that copra and coconut oil have become uneconomic under many conditions, and that coconut oil will never again be the important factor in world fats and oils it once was. High costs, increased consumption in the production areas, labor problems—all tend to hold down the quantities of coconut oil that will be available in world markets.

What does it all mean? Basically, it means demand for oils. It means markets which should show a favorable trend in coming months. It means that with a lower acreage of soybeans in 1959, even in spite of increased cotton acreage, we should have a favorable oil market during coming months.

And what does it mean for the long pull? Increased market potentials for American soybean oil. From the standpoint of quality and price we are in a favorable position to be competitive with any oil originating in any country of the world—possibly excepting oils sold with political motivations and without regard to economics.

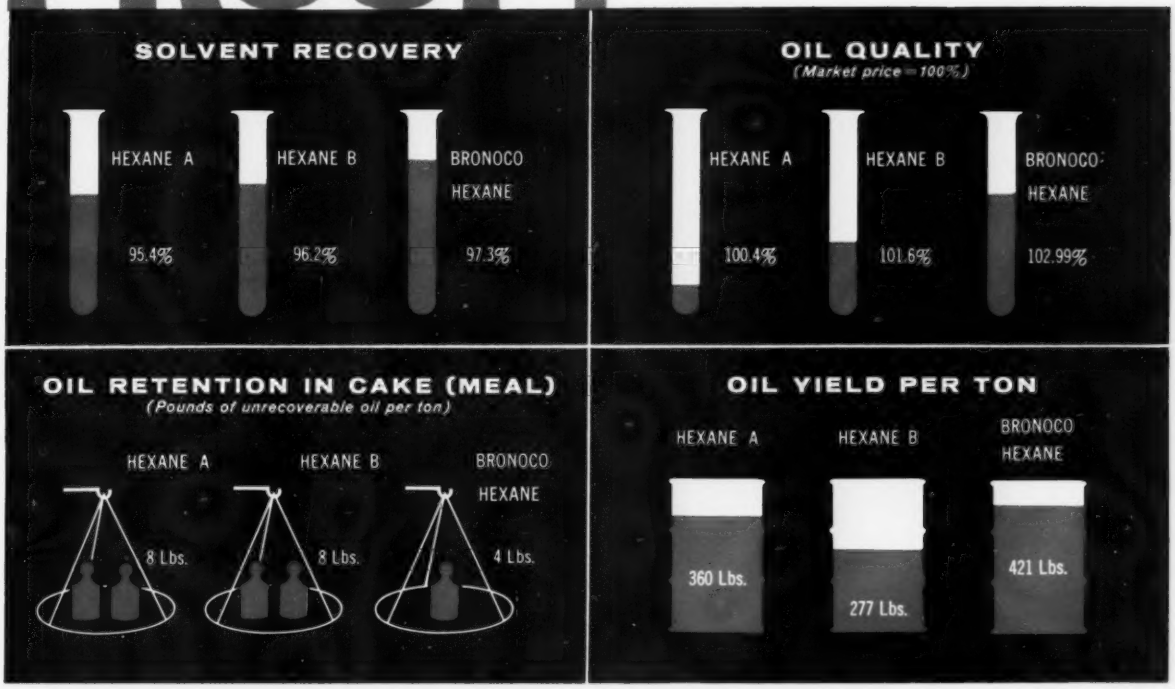
FIRST BOLD STEP IN MEAL PROMOTION Elsewhere in this issue you will find a report on the International Animal Feed Symposium which was held in Washington, with visits to several other cities, last month. This is a very significant forward step, unrecognized by most Americans and even by most people in our industry. Sponsorship by the Soybean Council of America, Inc., is certainly to be commended.

Here in the United States we are well ahead of most of the rest of the world in our knowledge of animal nutrition. Much of that knowledge has been acquired in the past 2 decades. Much of it has not permeated beyond our borders. Until you have seen the situation yourself it is hard to believe that much livestock is still fed as it was thousands of years ago—that protein meals are regarded as mere substitutes for cereals—with no recognition given to protein in the ration.

As more general recognition is given to the place of protein in the feeding of productive livestock the demand for proteins in the world is going to increase materially. In that recognition will come also a recognition of the superiority of soybean protein. As that comes about the markets for U. S. soybean meal will increase in proportion to our sales and promotional efforts in this field. It is not too early to start concentrated efforts in this field now. The efforts being made by the Soybean Council in certain European countries, where soybean oil meal for poultry feeding is being featured, are the first bold step in this direction. More extensive steps must follow.

We have only scratched the surface in developing markets for American soybeans. We must go far beyond present efforts. We must do more than talk about it—we must act.

PROOF! *



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"THE WORLD NEEDS MORE SOYBEANS."

The above will be the theme of the 39th annual convention of the American Soybean Association to be held at the Hotel Sheraton-Jefferson, St. Louis, Aug. 11-12.

Taking note of the twin facts of huge U. S. surpluses and the overwhelming need of the rest of the world for better diets, the committee is building an outstanding program around this theme and is lining up some of the best speakers available to our industry.

The convention will follow the annual meeting of the National Soybean Processors Association, also at the Sheraton-Jefferson, on Aug. 10.

It's not one bit too early to be thinking about your hotel reservation for the meetings. Make your reservation direct with the hotel. Write:

Reservation Office, Sheraton-Jefferson, 12th and Locust Blvds., St. Louis 1, Mo.

All rooms are air conditioned.

The July Soybean Digest will carry more convention information and a preliminary program.

As usual, much of the meetings' informal activity will center around the exhibits. And from early advance sales it appears that a considerable number of firms serving the industry will be represented at St. Louis this year.

The following firms are among those that had reserved space at press time:

Seedburo Equipment Co., Chicago.

Albert Dickinson Co., Chicago.

V. D. Anderson Co., Cleveland.

Simon-Carter Co., Minneapolis.

Hot Spot Detector, Inc., Des Moines.

Columbian Steel Tank Co., Kansas City.

Merrill Lynch, Pierce, Fenner & Smith, Chicago.

Urbana Laboratories, Urbana, Ill.

Crown Iron Works Co., Minneapolis.

PTC Cable Co., St. Paul.

Radson Engineering Corp., Macon, Ill.

R. W. Booker & Associates, St. Louis, Mo.

California Spray-Chemical Corp., Maryland Heights, Mo.

A. T. Ferrell & Co., Saginaw, Mich.

Shanzer Mfg. Co., San Francisco, Calif.

Soybean Digest, Hudson, Iowa.

Soybean Council of America, Inc., Waterloo, Iowa.

For further information about the exhibits contact: Geo. McCulley, business manager, American Soybean Association, Hudson, Iowa.

BOOTH arrangement on mezzanine floor, where convention will be held.

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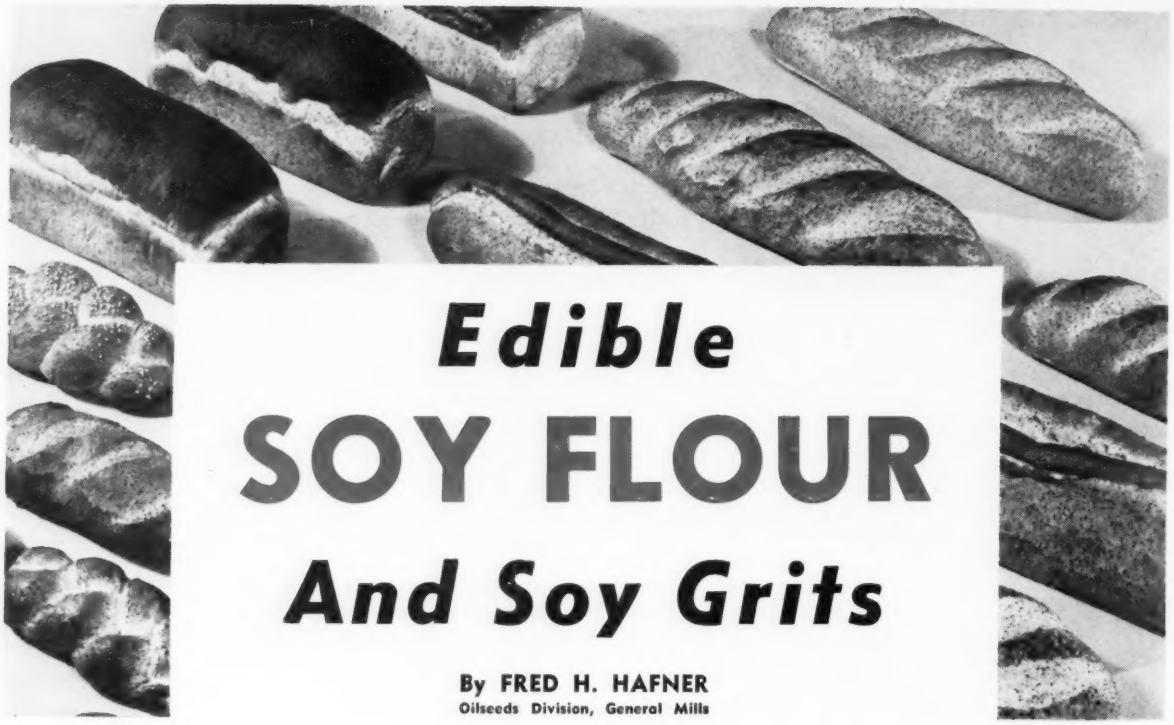


Edible SOY FLOUR And Soy Grits

By FRED H. HAFNER
Oilseeds Division, General Mills

SOYBEANS are a primary source of vegetable oil for use in shortening, margarine, salad oils and protective coatings; and of vegetable protein for use in animal feeds, human food, and industrial products.

Of growing importance is the use of soybean products as a source of balanced and complete protein for food fortification. Edible soy flour and edible soy grits—both excellent sources of soy protein—are the types of soy products used to achieve such fortification.

What are edible soy flour and soy grits?

Edible soy flour and grits are products produced from specially selected, cleaned soybeans by first cracking and removing the outer bran layer or hull and then processing under carefully controlled conditions with or without removal of the oil fraction followed by grinding and classifying into various particle sizes to meet specific needs.

Full fat soy products contain all the oil originally present in the unprocessed soybean.

Defatted soy products result from the nearly complete removal of oil from soybeans by the use of certain hydrocarbon solvents.

Low fat soy products are derived either by partial removal of oil from soybeans by the application of pressure in a mechanical screwpress or by adding back soybean oil or lecithin to defatted soy products to a specified level usually in the 5% range.

High fat soy products are derived by adding back soybean oil or lecithin to defatted soy products to a specified level usually in the 15% range.

Lecithinated flours are derived by adding lecithin to defatted soy products to a specified level, usually in a range up to 15%.

What forms do they come in?

Edible soy products are available in a variety of particle sizes.

Generally, all soy products passing through a 100-mesh screen are referred to as *flour* (or powder); all soy products in the 5-mesh to 80-mesh range are regarded as grits (or granules).

Soy flour may be had in various grinds such as 100 mesh, 150 mesh, 200 mesh—and even 300 mesh. Depending on the manufacturer, the grit products may be referred to as coarse, medium or fine grits. The common particle or grind size on soy grits may be 4, 5, 6, 8, 10, 12, 14, 18, 20, 30, 40, 50, 60, 80, or 5-20 mesh (through 5 and over 20), 20-50 mesh (through 20 and over 50), and so on. There are certain standard screen sizes available with a wide variety of custom grind products possible—usually at some premium over the standard products.

What are the factors to be considered in the manufacture of soy flour and grits?

Information has been presented above on the variation in fat content of edible soy products. There are a number of other important factors to be taken into consideration in the manufacture of soy flour for edible use. Depending on the processing and degree of heat treatment given by food manufacturers to their finished products containing soy flour or soy grits, the soy products as manufactured by different soy processors may be given different types and degrees of heat treatment. Generally, the purpose of heat treatment is to improve flavor and nutritive value, as well as to destroy or minimize enzymatic activity. There are certain special cases, however, where high enzyme activity is desirable.

Raw dehulled soybeans have the following characteristics, which are usually considered to be undesirable:

A bitter flavor component sometimes referred to as "beany" or "grassy."

They contain protein having relatively low nutritive value due in part to the presence of certain antagonistic components and in part to some configuration of the natural protein that prevents effective uti-

lization of the cystine-methionine amino acid complex.

They contain enzymes such as lipoxidase (fat oxidizing), urease (urea decomposing), beta amylase (starch converting), lipases (fat splitting) and many others.

They contain toxins such as "soyin," a hemagglutinating factor.

They contain a host of other factors and components some of which have yet to be identified.

They contain inhibitors such as "anti-trypsin."

One can readily appreciate the important role of the soy processor who, by converting raw soybeans from an unpalatable state of poor nutritional quality and limited usefulness into edible soy products with acceptable flavor, exceptionally high nutritional quality and almost unlimited usefulness makes available the *best* low cost source of protein known to man today.

What is the composition of the various edible soy products?

Typical analysis of soy flour and grits:

	Full fat	High fat	Low fat	Defatted
Protein, %	40.0	45.0	48.0	52.0
Fat, %	20.0	15.0	5.0	0.5
Fiber, %	2.5	2.5	3.0	3.0
Ash, %	5.0	5.0	5.5	6.5
Moisture, %	8.0	8.0	8.0	8.0

These analyses usually are the starting point in determining the product best suited for a particular application. Other specifications that may need definition include:

Color
Granulation
Protein (or nitrogen) solubility
Enzyme activity
Stability
Nutritive value of protein
Water absorption (and retention)
Bacterial count
Anti-trypsin activity
Suspendability
Dustiness
Free-flow characteristics
Wettability
Adhesive quality
Flavor
Odor

One can readily see that technical assistance from someone thoroughly familiar with soy products could be of tremendous help to a food manufacturer interested in adapting edible soy products to his particular food item or food line. Close collaboration between soy processors and food manufacturers is to be strongly encouraged.

What is the principle use of edible soy products?

The outstanding feature of edible soy products is their relatively high content of balanced protein. Soy protein, when properly processed, contains in readily available form all of the so-called *essential* amino acids in proportions that insure or promote efficient utilization within the body. The protein content varies from 40% in the full fat products to 55% in the defatted products.

Although no attempt will be made to quote prices therein, protein can be purchased for less than 10¢ per pound in the form of edible soy products—a price lower than that available in any other source.

With the present day emphasis on reducing our caloric intake in the form of fats, there has been an increasing interest in protein to replace fat calories. Food manufacturers have recognized this trend and are conscious of the responsibility to provide both better and richer sources of balanced protein in many of their food items. Most of these food items are those derived from cereal grains but some are in products of the meat industry, vegetable industry and fruit industry.

Soy proteins are by far the highest quality of any of the vegetable proteins, being about equal to milk and meat proteins.

By fortifying various food products with the protein of edible soy products, food manufacturers are enabling the nutrition-conscious public to upgrade its dietary intake of protein, maintain excellent dietary protein balance and avoid excessive intake of fat.

What types of products are edible soy products used in?

The list is a long one but here are some of the more important ones:

Bread—both white and specialty high protein types.

Bakery products of all types.

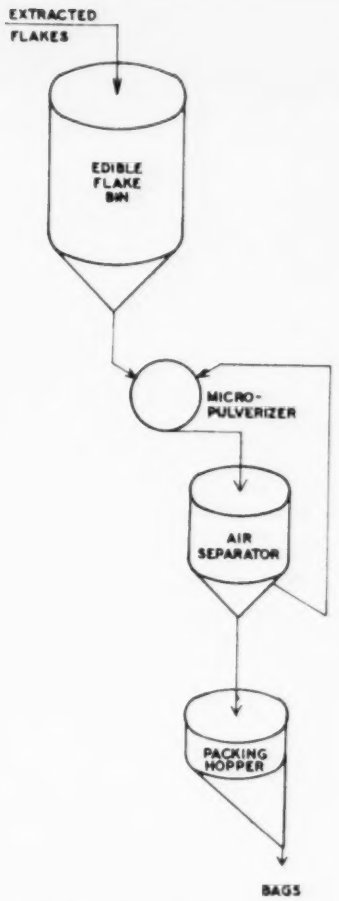
Breakfast cereals—both ready to eat and hot types.

Macaroni and spaghetti type products.

Doughnuts and doughnut mixes.

Cookies and crackers.

Snack items.



FLOW DIAGRAM showing soy flour manufacture in chemurgy division plant of Central Soya Co. Extracted flakes come from toaster and cooler.

Soups.

Baby foods, dry and canned.

Prepared mixes.

Prepared meat products.

Candies.

Beverages, especially high-protein food drinks.

Pancake and waffle mixes.

HI PROTEIN cookies, 25% toasted soy grits.

In addition to manufactured food items, edible soy products are used extensively in institutional feeding programs as a low-cost source of excellent protein for meeting the protein requirements.

Who manufactures edible soy products in the United States?

Edible soy products may be obtained from any of the following soybean processors:

Archer-Daniels-Midland Co., Minneapolis, Minn.

*Central Soya Co., Inc., Fort Wayne, Ind., and Chicago, Ill.

General Mills, Inc., Minneapolis, Minn.

Honeymead Products Co., Mankato, Minn.

Spencer Kellogg & Sons, Inc., Decatur, Ill.

A. E. Staley Mfg. Co., Decatur, Ill.

Samples, technical assistance, and descriptive literature may be obtained from any of these processors.

* Chemurgy division of the Glidden Co., acquired by Central Soya in 1958.

Baton Rouge Installation Is the Largest on Gulf

COMPLETION OF a 5-million-bushel addition to the Cargill-operated Port Commission elevator at Baton Rouge, La., has made it the largest grain export installation on the Gulf coast, according to Cargill Manager Lloyd W. Graving.

Ernest D. Wilson, president of the Greater Baton Rouge Port Commission, recalled that until 4 years ago, when the original 2.5-million-bushel elevator was completed, the port played no role whatever in export of Midwest grains. "In contrast," he said, "its present 7.5-million capacity makes it the Gulf's largest and one of the most active in the United States."

Vessel loadings have climbed since October 1955, when the first export order was filled, to a present rate of roughly 18 ships a month, Graving said. This is a 50% increase over the 1957-58 crop year and reflects a 50% boost in total grain through the port.

Newly completed elevator construction, put into operation in late April, includes eight 500,000-bushel steel storage tanks and 20 smaller steel bins. Installation in the past year of a high-speed marine leg for unloading barges has also improved the elevator's efficiency, Graving said.

USDA's Service Award to McKinney for TESOM Work

IN RECOGNITION of achievements in research a Superior Service Award has been conferred by the U. S. Department of Agriculture on Leonard L. McKinney of the Northern Regional Research Laboratory, one of the utilization and development divisions of USDA's Agricultural Research Service.

Citation for the Peoria scientist was presented May 25 by Secretary of Agriculture Ezra Taft Benson during special ceremonies in Washington, D. C.

Mr. McKinney, assistant director at the Northern Laboratory and until recently leader of its protein research group, received the Department's Superior Service Award for developing new commercial derivatives from vegetable proteins and for discovering what causes toxicity to arise in proteins during certain types of processing. By identifying, isolating, and synthesizing the toxic factor, Mr. McKinney provided new chemical agents for medical research and information important for processing agricultural products.

The toxicity of trichloroethylene-extracted soybean oil meal (TESOM) has plagued soybean processors and livestock farmers around the world since it was first observed in Scotland in 1912. Many research workers studied the problem and decided that modern technology could avoid whatever altered the blood-forming power of the bone marrow and caused hemorrhagic aplastic anemia in cattle. Soybean meal extracted by other means does not have the toxicity of TESOM.

Between 1943 and 1950, 11 plants were built in the United States, one in Italy, and another in Japan to use trichloroethylene, a non-explosive solvent. High death rates began to occur again in herds of cattle where TESOM was fed.

In 1951, Mr. McKinney postulated the cause of TESOM toxicity—a theory that he and his associates finally proved by chemical synthesis of a cysteine derivative (DCVC) in 1957. Calves fed extremely small doses of DCVC developed symptoms identical to those associated with TESOM poisoning. After 1952 trichlorethylene was no longer used in the United States as a solvent to extract oil from soybeans.

In September 1958 Mr. McKinney was invited by the Cancer Chemotherapy Center, National Institutes of Health, to discuss his work with those who had recognized DCVC as an important lead for health studies and as a chemical compound that might aid in developing new anti-cancer drugs. Various medical schools reported experimental results with DCVC, particularly when it was used clinically in certain forms of leukemia.

One physician commented, "For the first time, we have an agent for producing controlled aplastic anemia in animals at will."

While solving the TESOM problem, Mr. McKinney conducted research leading to a new product from corn. Water-soluble zein was in commercial production within a year after he described how to process this corn protein at the 1957 meeting of the Illinois Academy of Science.

Mr. McKinney started research on the chemistry and uses of proteins in 1937 at the Department's Regional Soybean Industrial Products Laboratory in Urbana.

L. L. McKinney

Charles Greve has joined General Mills as manager of specialty oil sales for the oilseeds division. Since 1953, he has been sales and advertising manager for the Lavoris Co., Minneapolis. Previous to 1953 he had been manager of fatty acid sales in eastern United States for the chemical division.

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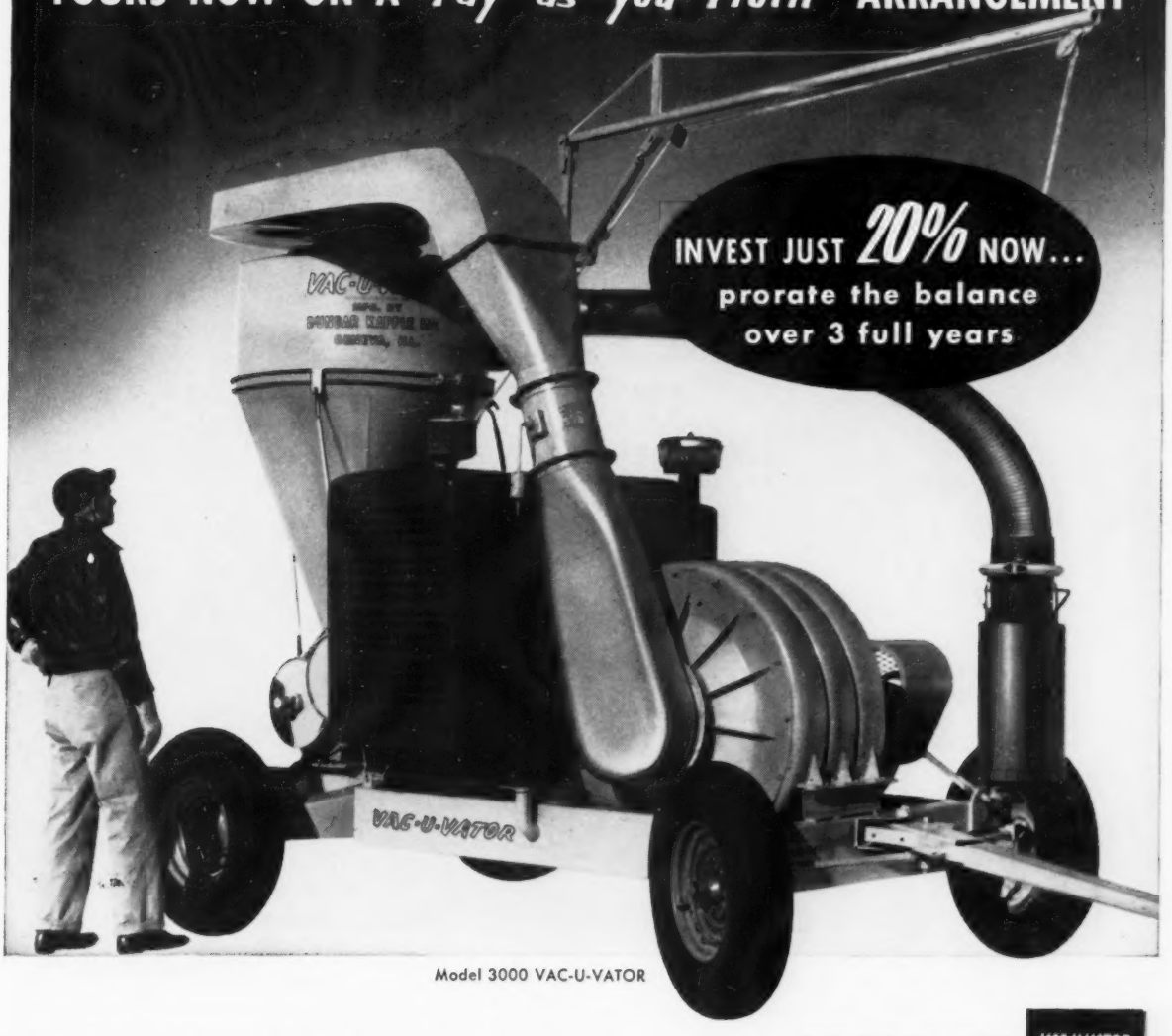

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THE NEWS IN BRIEF

THE CROP, MARKETS AND OTHER ITEMS OF NOTE

Planting Ahead of Normal

Soybean planting was ahead of normal—though somewhat slower than last year—and generally making good progress when the Soybean Digest went to press June 1.

It appeared that there would be little late shifting of corn ground into beans unless heavy rains should necessitate considerable replanting. Despite heavy rains, Cornbelt farmers were mostly ahead of normal in corn planting except for a lagging area that included parts of Nebraska, Kansas, Missouri, and Iowa. Planting of corn in regions south of the Cornbelt was largely in the windup stage.

Soybean planting in Iowa was considerably behind last year and the average. Planting was most advanced in northwestern and north central Iowa and least advanced in southwestern and south central Iowa.

Soybean planting was progressing normally in Kansas and early fields were emerging to good stands. Minnesota planting was somewhat behind last year but moving ahead rapidly. South central and southeast districts were somewhat more advanced than other areas. Planting was well along and ahead of average in Missouri. It was under way in Oklahoma and North and South Dakota. And only a small part of the crop remained to be planted in Tennessee. Planting was somewhat behind last year in Ohio.

A sizable acreage remained to be planted in Arkansas while early planted soybeans were being cultivated. They were mostly in good to fair condition in Mississippi. There were still some soybeans to be planted in Louisiana.

Planting was well under way in Maryland and Delaware and was well over half completed in North Carolina.

The Size of 1959 Bean Acreage

Most observers appear to be agreed that soybean acreage will be smaller this year. But there is a difference of opinion in the trade on how deep the cut will be as compared to last year—whether it will actually reach the 7% cut indicated by USDA's March planting intentions report. U. S. Department of Agriculture observers were inclined to believe that the improved outlook for soybean prices might have some effect on the acreage.

In general soil moisture is plentiful to excessive over the bean belt except for local dry areas in the Dakotas, western Minnesota and western Tennessee. Some local dry spots appeared to be developing in the Midsouth June 1.

Soybean Price Outlook

Soybean prices to farmers over the next few months probably will average a little above the loan rate of $2.09 per bushel until new crop beans become available, according to USDA. This will reflect CCC sales policy to sell beans at support plus 5¢ per bushel plus carrying charges of 1.5¢ per month, or fraction of a month, beginning June 1.

Europe's Imports Of Fats Up

Western Europe's 1959 gross imports of fats, oils and oilseeds are forecast at a record 5.4 million metric tons, oil or oil equivalent, by USDA. **This would be about 15% more than the 4.7 million tons of 1958** and slightly more than in 1957.

The bulk of increased imports in 1959 will consist of oilseeds and vegetable oils. Gross imports of these may be one-fourth higher than last year.

The calendar year 1959, like the latter half of 1958, will be characterized by extensive substitution of other edible vegetable oils for coconut oil. Copra and coconut oil have been scarce since early 1958 because of drought. Since the United States continues to import these

items at or above previous levels, a further decline in shipments of copra and coconut oil to Western Europe is expected this year.

The U. S. Department of Commerce has decided to dispose of its military stockpile of coconut oil over a period of time, according to Washington reports. Size of the stockpile is not public information but the trade estimates it at 300 to 350 million pounds, about half of U. S. annual imports. Under present law sales can't begin for about 6 months.

The United States is the major source of additional vegetable oils and oilseeds for Western Europe this year. Communist China is currently unable to maintain its shipments of soybeans to Europe at earlier levels, even though it ceased shipments to Japan after last summer.

Northbound shipments of soybeans through the Suez Canal, practically all from communist China bound for Europe, are sharply up so far this year as compared with a year ago, USDA reports. February shipments of soybeans were 4.4 million bushels compared with 1.7 million in February 1958. Shipments October-through-February were 11.2 million bushels compared with 3.3 million for the same period a year ago. Shipments of other oilseed crops, however, were lower for the same period.

USDA has announced issuance to Spain of three authorizations under P. L. 480 for purchase of up to $2.1 million worth of soybean or cottonseed oil. The authorizations are issued to reprogram unused balances from previous authorizations. Contracts made between June 2 and Aug. 31 are eligible for financing, delivery between June 2 and Sept. 30.

During May USDA announced a supplemental agreement with the United Arab Republic to finance purchase of about 22 million pounds of soybean or cottonseed oil under P. L. 480. The P. L. 480 agreement with Pakistan was amended to provide for the purchase of an additional $13.7 million worth of U. S. soybeans or cottonseed oil, purchase authorizations to be announced later.

ICA authorizations were issued to France for approximately 1,900 metric tons of U. S. soybeans, and to Morocco for 300 tons of soybean oil.

Canadian Support Price

The Canadian government has set a support price of $2 per bushel on 1959-crop soybeans, compared with the U. S. support price of $1.85, according to reports. The action drew an immediate protest from A. A. Jolley, Chatham, chairman of the Ontario Soya-Bean Growers' Marketing Board. The Board had asked for a support price of $2.53 per bushel, or 110% of the 10-year average price.

Mr. Jolley said Canadian soybean growers do not produce enough beans to meet their domestic market requirements. A higher support price would have made it possible to reduce imports of U. S. soybeans and soybean products, and at the same time double the present Ontario soybean acreage of 250,000. This would have the added advantage of taking 250,000 acres out of surplus, he said.

In July or August Canadian growers will receive deficiency checks of between 15¢ and 20¢ per bushel on soybeans they have delivered since last Sept. 1, it is reported.

Freight Rate Cut on Soybean Meal

Western Trunk Line railroads have announced soybean meal rate cuts averaging about 20% effective May 26. Cuts apply north of a line drawn from St. Louis through Kansas City, Omaha and Denver, and follow cuts of about 40% announced by Southwestern Lines last February. Eastern Trunk Line railroads are not participating, which has the effect of applying flat instead of proportional billing to the reduced rate shipments in Illinois and Wisconsin. Linseed and cottonseed meals were not immediately affected.

Ersel Walley, Fort Wayne, Ind., chairman of the American Soybean Association market development committee, left for Japan June 5 in connection with the export program in that country.

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(Lefthand picture) Soybean line at left is yellow and dwarfed as it lacks iron efficiency genes. Line to right, which has iron efficiency genes, is green and vigorous. Selecting varieties with a high iron efficiency rating is very important in Arizona.

(Righthand picture) Response of Lee soybean to iron chelates in iron deficient soil. Row at left was treated with Fe 330 at planting time whereas the row at right was untreated. Notice how new growth is completely chlorotic.

Eleventh of a Series

Soybean Research in Arizona

By DAVID D. RUBIS

In Charge of Oilseed Crops,
University of Arizona

WHEN COTTON acreage restrictions went into effect in 1954, the farmers of Arizona as well as other major cotton growing states were looking for something to plant on the vacant acres. Soybeans seemed to be one of the most promising alternate crops. The new variety Lee had been tested and released as the first strain adapted to the irrigated valleys of southern Arizona. The cottonseed processing mills wanted an oilseed to extend their shortened crushing season. Finally, there was a ready-made market for soybean cake in the rapidly expanding cattle feeding and dairy industries in Arizona.

From 1953 to 1956 the soybean acreage increased from test plots to nearly 15,000 acres. Under favorable growing conditions high yields were being obtained and other crops following soybeans were especially productive. Soybeans appeared to be off to a good start. An abnormally early frost in 1956 just as the beans were maturing, plus a light rain a few days later, resulted in severe shattering. Losses amounted to more than 25% in many fields which had shown promise of yields of 30 to 40 bushels. The new crop was not able to survive such a setback. Only a few acres of soybeans are now grown commercially in Arizona.

Whether soybeans will ever become commercially important in Arizona will depend on research and its solution to the many problems involved. Growing soybeans under irrigation and low humidity conditions poses many problems not encountered in the soybean belt. These problems are both economic and agronomic. Soybean production costs under irrigation are high compared with crop value. It is estimated that it requires a minimum yield of 25 to 30 bushels of soybeans per acre to cover the production costs. Soybean yields in Arizona have varied between 10 and 45 bushels per acre, with the average being about 25 bushels in 1955. Because of a low net return, the competition between soybeans and cotton for irrigation water generally works to the disadvantage of soybeans.

Shattering Problem

One of the major problems encountered when soybeans were first introduced in Arizona was seed shattering. In cooperation with the soybean improvement program of the U. S. Department of Agriculture, many hundreds of lines and varieties have been tested for shattering resistance and yield performance. Of the lines tested, Lee which was developed by Dr. E. E. Hartwig and his coworkers proved best and was released in Arizona in 1953. Since then many new lines and varieties have been tested, but none have been superior to Lee in yielding ability although a number have been found with better shattering resistance.

Early tests showed that root nodulation was very poor. Cooperative tests with the USDA demonstrated that the strains of nitrogen-producing bacteria used for inoculation in the soybean belt were not effective in the Southwest, but that certain strains introduced from various parts of the world were more effective. After testing many strains of bacteria from all parts of the world, a special inoculum for the Southwest was produced and good nodulation is now possible.

Soybeans are apparently inefficient in their absorption or use of iron and may show deficiency symptoms in certain Arizona soils, particularly if salt conditions exist. Soybean lines show a wide range of variability in iron efficiency. The variability is so great that under a certain set of conditions some lines will die whereas other lines will not show any deficiency symptoms. Certain cultural practices will also affect iron efficiency; for example, June plantings show a greater degree of iron deficiency than May plantings.

Studies on date of planting with the recommended variety Lee, planted at 15-day intervals from Apr. 15 to July 1, showed that May 15 was the optimum planting date in most locations in southern Arizona. In Yuma and Maricopa Counties, where double cropping is a practice, soybeans planted in May are a full season crop because they would have to be planted in June to follow small grains. Tests have shown that Lee soybeans planted in June were shorter and slightly lower in yield. If soybeans are to be produced as a full-season crop and are to be economical, varieties with higher yielding ability must be developed.

In 1958 the breeding nursery and yield tests at the Mesa Branch Ex-

periment Station were planted at two dates, the middle of May and the middle of June. This was an attempt to select lines which when planted in June would attain a desirable height and yield. Enough variation was evident that, with little doubt, it should be possible through breeding to develop varieties more adapted to June plantings. A variety adapted for June planting would require less irrigation water and permit double cropping with small grains. Such a variety would also need to be resistant to the lesser corn stalk borer, as this insect may cause serious reduction in stands. Preliminary evidence suggests that some lines are tolerant to the lesser corn stalk borer. In the June plantings, a number of lines were completely destroyed by the borer in all replications, whereas a number of lines showed complete tolerance in every replication. From these indications it is possible that varieties highly tolerant to the lesser stalk borer may be developed by breeding.

High Temperatures

Observations for several years have shown that most lines and varieties may flower profusely during July, but do not set seed until the early part of August. It has been postulated that the extremely high temperatures of June and July did not favor seed set. In 1958, several northern varieties were grown in the nursery and these varieties flowered and set seed during July; however, these varieties were short, very poor in yield, produced shriveled seed. Basic research in physiology is necessary to provide answers to these problems.

Because of the low humidity and dry climate in Arizona, mature soybeans may dry from 20% moisture to as low as 8% moisture within a week or 10 days. This presents problems in harvesting because about 14% moisture is optimum for combining soybeans.

Soybeans harvested at 8% moisture can be easily damaged and result in poor quality seed. Tests run on the relation of combine cylinder speeds and seed germination on soybeans at 8% moisture have shown that the slower the cylinder speed, the higher germination. This relationship held true down to 280 r.p.m., the slowest speed tested. It is possible that a combine having a "rubbar" principle, with a slow cylinder, would be more suited to harvesting soybeans under Arizona conditions. Engineering research may answer these problems.

It appears that the basic problems of soybean research in Arizona are not the usual problems of determining the best way to produce the existing varieties of soybeans, but rather that of finding or developing adapted varieties that can be planted at a specific date and condition. Soybeans may never compete successfully in Arizona with other primary crops, but may be adapted to fit into the agricultural picture as a good secondary crop.

Midsouth Shippers Will Meet in Memphis Aug. 4-5

MIDSOUTH Soybean and Grain Shippers Association will hold its 6th annual convention at the Hotel Peabody, Memphis, Tenn., Aug. 4 and 5, Paul C. Hughes, secretary, has announced.

The meeting was originally scheduled for Aug. 11 and 12, but the dates were changed to avoid a conflict with the convention of the American Soybean Association in St. Louis on those dates.

The announcement was carried incorrectly in the May Soybean Digest due to a typographical error.

Arkansas Note

Nitrogen Fertilization of Soybeans

By GLENN W. HARDY

Assistant Agronomist, University of Arkansas, in Arkansas Farm Research

UNDER EXCELLENT growing conditions soybean yields of 40 or 50 bushels per acre are not uncommon in Arkansas, with higher yields occasionally reported. The question of how to increase yields naturally arises in the minds of those whose yields are well below these figures. In an attempt to find at least a partial answer to this question, a study of nitrogen fertilizer of soybeans has been undertaken in several states.

Soybeans in general are not as responsive to fertilization practices as are many of our other field crops. The soybean plant is a legume whose root system is normally host to microorganisms which are capable of taking nitrogen from the air and changing it into a form that the plants can use. Agronomists have learned, however, that this source of nitrogen is usually not sufficient by itself for high soybean yields. This means that some of the nitrogen that soybeans use must come from the soil. Thus it has been suggested that soybean yields might well be limited by a deficiency of soil nitrogen.

From time to time workers in other states have reported results of field trials using nitrogen on soybeans. In some cases increases in yield have been reported, while in others there has been very little response.

In recent years some of the North Central States have reported small but economic increases in soybean yields when nitrogen was sidedressed at the very early bloom stage. This past season two such experiments were carried out at branch experiment stations in Arkansas. Different nitrogen carriers were sidedressed at two levels of nitrogen, as shown in table 1.

It can be seen readily that nitrogen sidedressed at the very early bloom stage did not increase yields in 1958. The small yield differences that did occur were not significantly different in the statistical sense.

A field trial in which nitrogen was applied in a factorial experiment with phosphorus and potassium was conducted at the Rice Branch Station on Crowley silt loam in 1957 and repeated in 1958. The fertilizer was applied in a band 2 to 3 inches to the side of the plants a few days after emergence. A similar experiment was conducted in Lafayette County outlying from the Southwest Branch Station on Lonoke silt loam in 1958. In this instance the fertilizer was placed under the bed prior to planting. All three tests were replicated five times. Only the nitrogen effects will be discussed here.

The data in table 2 show that only a very small increase in yield was obtained from nitrogen applications at Stuttgart in 1957, with no response to applied nitrogen in 1958. A small but unimportant decrease in yield resulted from nitrogen applications in Lafayette County in 1958.

While none of the data presented here indicate marked response to nitrogen, it would be well to remember that the past 2 years have been excellent ones for soybean production in Arkansas. Umbreit and Fred pointed out many years ago at the University of Wisconsin that under optimum growing conditions, where the carbohydrate-nitrogen ratio in the plant was kept balanced, the soybean preferred free nitrogen from the air rather than fertilizer nitrogen. However, if the balance was disturbed by any cause, including adverse temperature and moisture relationships, fertilizer nitrogen was desirable.

Also, with one exception, the soils used in this study showed a capacity for producing relatively high soybean yields without fertilization. With these things in mind, it seems possible that in other years on the same or different soils greater response to nitrogen may be obtained. Work will be continued on this problem.

TABLE 1. EFFECT OF NITROGEN SIDEDRESSED AT VERY EARLY BLOOM STAGE ON SOYBEAN YIELD, 1958

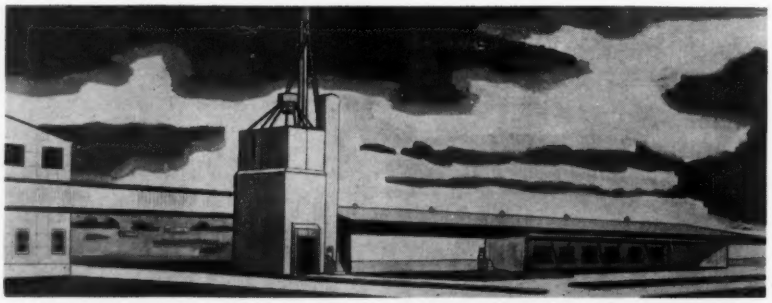
Nitrogen carrier	Lb. N per acre	Yields (bu./acre)[1] Stuttgart	Kelso
Urea	30	46.8	19.1
Urea	60	47.4	19.2
Ammonium nitrate	30	44.3	16.1
Ammonium nitrate	60	44.3	17.3
Sodium nitrate	30	44.5	18.2
Sodium nitrate	60	44.8	18.0
Solution 32	30	43.1	19.0
Solution 32	60	45.2	18.3
No nitrogen	—	43.2	17.1
L.S.D. @ 5% level		n.s.	n.s.

[1]Average of six replications.

TABLE 2. AVERAGE NITROGEN EFFECT IN 2 BY 3 NPK FACTORIAL EXPERIMENTS

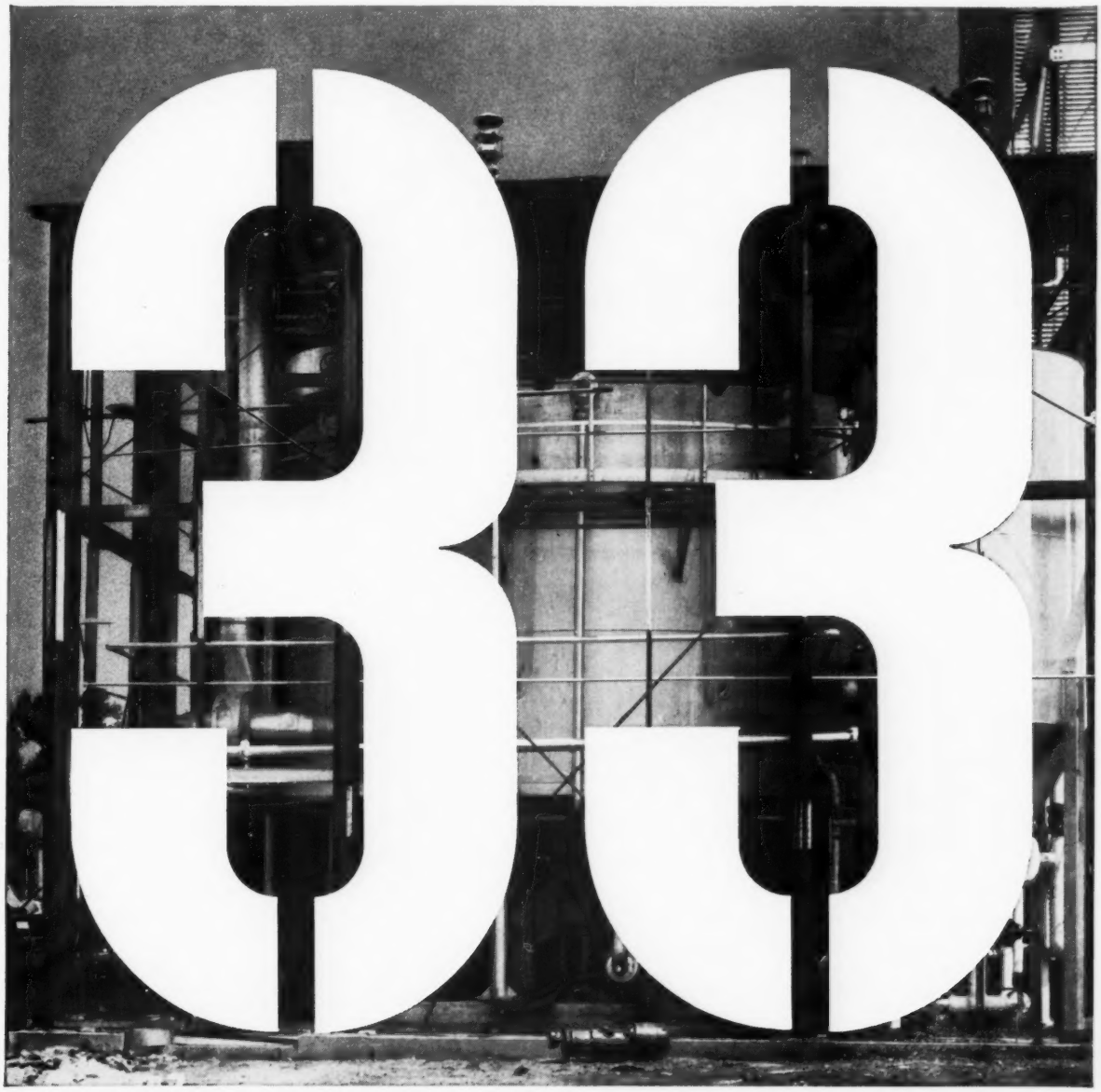
Pounds nitrogen per acre	Yield (bushels per acre) Stuttgart 1957	Stuttgart 1958	Lafayette Co. 1958
0	39.7	44.3	43.5
40	41.0	43.5	—
45	—	—	41.4
L.S.D. @ 5% level	0.7	n.s.	1.4

New Central Soya Warehouse



ARTIST'S SKETCH of the new, ultra-modern warehouse, bulk storage, and truck loading facility now under construction at Marion, Ohio, by McMillen Feed Mills, the feed division of Central Soya Co., Inc. At left in the picture is the present plant, whose production facilities will be linked with the new warehousing operation by the overhead conveyor bridge. Storage for 280 tons of bulk feeds will be provided by 18 separate welded-steel bins in the new 80-by-220-foot facility.

Blaw-Knox builds for Cargill, Inc., Spencer Kellogg & Sons, Inc., and Quincy Soy Products Company. These recent projects feature the widely used Blaw-Knox Rotocel Extractor. Rotocels have been built with capacities ranging from 100 to 1800 tons per day.



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MODEL 900-C Vac-U-Vator loading soybeans from truck to boxcar at Peine Grain Co., Minier, Ill.

Jim Finnegan—*the Man Behind the Vac-U-Vator*

DEVELOPMENT of the Vac-U-Vator actually started about 27 years ago. In 1933, Jim Finnegan, the father of the present-day grain and soybean handling system, hooked up an air compressor to the bottom of a corn storage bin and found that the condition of the grain was actually improved by aeration. Later he experimented with moving grain by air and eventually developed a system that would work.

Today, sophisticated grain-moving systems manufactured by Dunbar Kapple, Inc., Geneva, Ill., are based on the discoveries that Finnegan made.

One of the first problems that Finnegan had to solve was how to move grain without having it pass through the pump or compressor. Two years after his first grain aerating machine was devised, he decided that a pocketed rotating vane was the answer to the problem. Another year of trial and error brought the perfection of such a vane.

Marriage of the vane with a complete system brought immediate results—a machine that could move 2,500 bushels of grain per hour. Despite its high horsepower requirements and cumbersome size and shape (grain men dubbed it "Finnegan's Octopus" because of its three 14-inch suction pipes), it unloaded a barge at Seneca, Ill., in one-fourth the time normally required.

Word of the new machine spread, and the Central Barge Co. of Louisville called for Finnegan's services. Later, he was asked to take the machine to Cincinnati to unload barges. This was in 1936, and from then until 1939 Finnegan moved up and down the Illinois and Ohio rivers loading and unloading grain.

In 1939, after one of the costliest grain fires in history, the machine was called to Chicago to salvage grain. For more than 7 months, it was kept busy reconditioning grain. More than 3 million bushels were reconditioned—grain that would otherwise have been lost.

When war broke out in 1939, grain shipments on the rivers virtually stopped. The machine was dismantled and its parts used to build a device to grind corn cobs for furfural in Peru, Ill.

In 1948, after grain surpluses were taken over by the Commodity Credit Corp. the need emerged for a portable grain-handling machine at government corn storage bin sites. Finnegan developed such a portable vacuum device and christened it the Vac-U-Vator since it was meant for use at grain elevators.

A series of events then ultimately led to mass production of this unit, and modifications of it. In 1949 the Department of Agriculture purchased the prototype model. Their testing, particularly on reliability and part breakage, caused them to give their official approval to the Vac-U-Vator.

Finnegan then produced 50 pilot models of the portable, two-wheeled single-stage turbine Vac-U-Vators. Successful placement of many of these with grain companies and government agencies led to Finnegan's joining Dunbar Kapple, Inc., and subsequent mass production of the Vac-U-Vator. Finnegan is still associated with this company.

Since that time, Vac-U-Vator has undergone many design changes and improvements. Model 980, for moving other types of grain (wheat, soybeans, milo), moved grain at the rate of 2,000 bu/hr.

Need for a larger, more powerful machine brought about the development of the marine Vac-U-Vator, a model 980 with increased horsepower. Within a few months, the 980 with variations became standard equipment on many large oil tankers. It is also used to unload grain from ships in places as far away as Bombay, Poland, Korea, and Mexico.

The latest stage in Vac-U-Vator development is the model 3000. This machine will move grain 200 feet at a rate of 3,000 bu/hr. Today, more than 3,500 machines are in use around the world.

The use of pneumatic material-handling equipment, both in the grain industry and in industrial applications, should rise sharply in the future. Finnegan and Dunbar Kapple executives feel that pneumatic automation in industrial materials handling offers tremendous potential.

S. C. Study of Factors Limiting Crop Production

A NEW RESEARCH project to determine the factors limiting the production of corn, soybeans and cotton was started at the Edisto Station near Blackville, S. C., this spring, according to T. C. Peele, soil scientist, Clemson College, Clemson, S. C.

"The objectives this year are to determine the limiting effects of nutrients and water on soybean yields," says Mr. Peele. "The experiments include variable amounts of nitrogen, phosphorus and potassium with and without irrigation. When the maximum yields are found that can be obtained by supplying fertilizer and water, we plan to move on to a study of other factors that may be limiting yields.

"As you know, the average yield of soybeans in South Carolina is very low and we hope that this investigation will point out some of the factors responsible for our low yields and indicate measures that can be used for raising these yields."

The investigation is partly supported by funds from the National Plant Food Institute. S. L. Tisdale, southeastern regional director, Reynold F. Suman, Edisto Station, and Mr. Peele have worked together in setting up the project.

Award to Westley

Kent H. Westley, son of Mr. and Mrs. Richard O. Westley, and a student at York Community High School, Elmhurst, Ill., has won a Central Soya merit scholarship. Kent will major in physics at Harvard College.

Use Rats, Meal in Nutrition Study

SOYBEAN RATIONS have opened the way for an easier research method to determine the growth effect of antibiotics on animals.

Researchers at the University of Nebraska have found that antibiotics increase growth of rats by 25% when added to a ration of raw soybean oil meal. Antibiotics brought gain up to the control level of rats fed cooked soybeans.

When an antibiotic increases the growth rate of rats it can be inferred that the ration may be lacking in an important nutrient, according to Dr. Raymond Borchers, of the University of Nebraska department of biochemistry and nutrition.

Working with this idea in mind, Borchers fed two similar groups of rats rations of raw soybean oil meal and cooked soybean oil meal. In this particular experiment, the cooked soybean oil meal ration was used as a control for two reasons:

The primary goal was to find something which would equalize the growth rate of rats on both raw and cooked soybeans.

The difference in animal growth rates between raw and cooked soybeans has been known for many years, Dr. Borchers said. For this reason, soybeans used in commercial feeds are cooked.

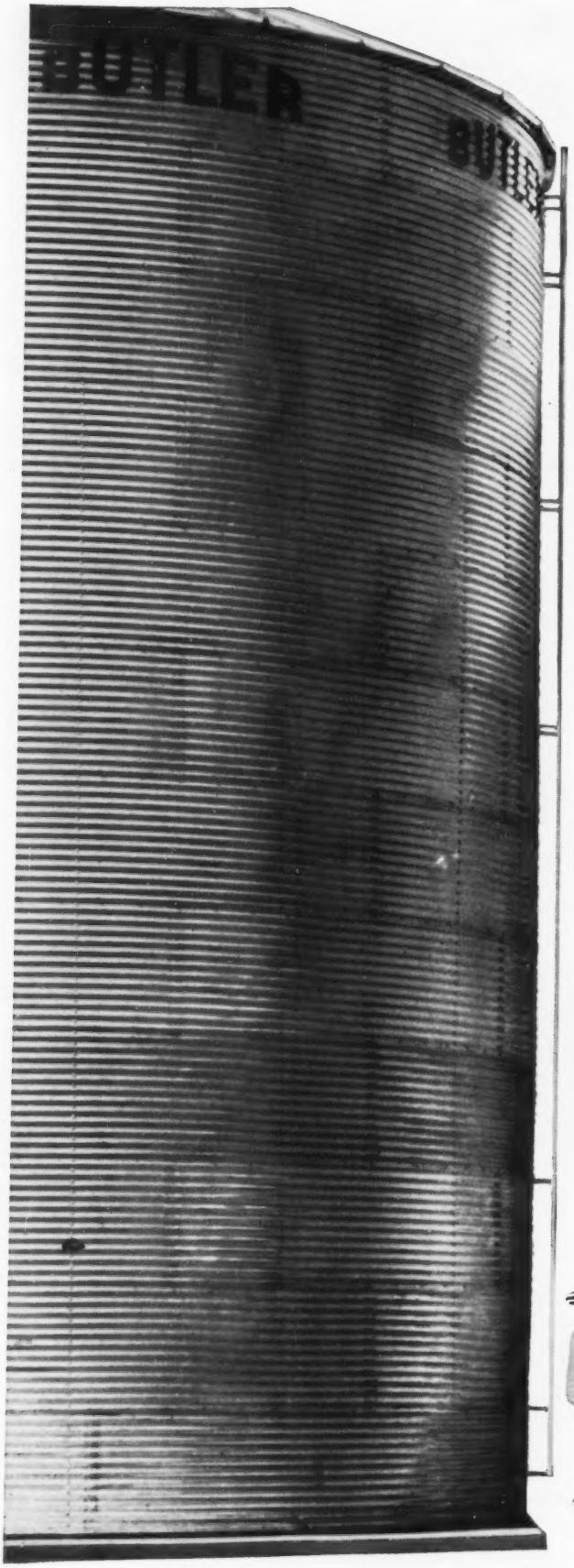
The addition of small (0.1%) amounts of penicillin and streptomycin, both antibiotics, resulted in approximately equal gains by rats fed raw and cooked soybean oil meal.

Since the growth rate between raw and cooked soybeans does differ there is now an experimental setup to investigate the effects of antibiotics on growth rate. This is a question on antibiotics that has never been answered, Dr. Borchers said.

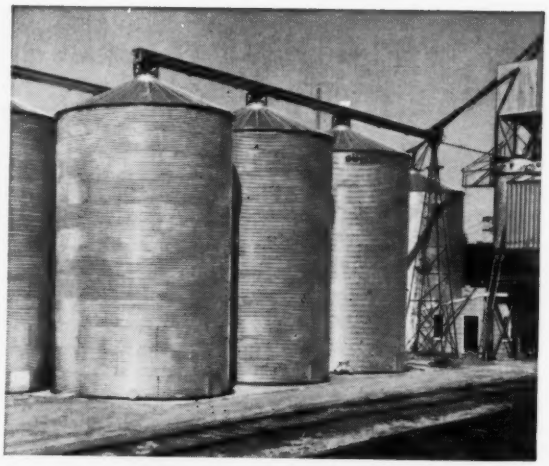
The work which leads to this new laboratory method for testing the growth effects of antibiotics stems from study on a growth inhibiting factor found in raw soybeans. Because of this growth inhibitor, a dietary supplement which would favorably affect the growth rate of rats fed raw soybeans was tried. This led to the additional study with antibiotics.

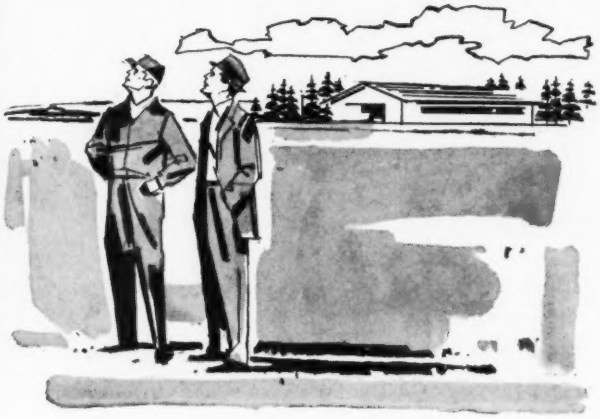
Research has indicated that the factor in raw soybeans causing this growth effect is a metabolic inhibitor, Dr. Borchers said. This inhibitor is destroyed on heating.

DR. R. L. BORCHERS of the University of Nebraska's department of biochemistry and nutrition uses rats in experiments with soybean rations to determine the growth effect of antibiotics on animals.



Butler





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21	32'	9,600
24	16'	6,700
24	18'8"	7,700
24	21'4"	8,700
24	24'	9,700
24	32'	12,700
24	40'	15,700
36	24'	22,700
36	32'	29,600
36	40'	36,400

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Steps in Developing A New Soybean Variety

U. S. Regional Soybean Laboratory test plots.

By R. L. BERNARD
and J. L. CARTTER

Research Agronomists, Agricultural Research Service, USDA

SOYBEANS ARE native to eastern Asia, where they have been cultivated for over 5,000 years. They were first introduced into the United States on a large scale about 60 years ago.

Most early varieties were produced as selections from these introduced strains. Such varieties as Illini, Dunfield, Richland, Manchu, Patoka, and the hay types, Wilson and Virginia, originated in this way.

The first soybean variety for Illinois developed by selection following crossing was Chief, selected from the cross Illini x Manchu and released by the Illinois Agricultural Experiment Station in 1940. All presently recommended varieties in Illinois have been selected from crosses.

First Step

Soybeans are a naturally self-pollinated crop (less than 1% of the flowers are fertilized with pollen carried by insects from other plants), and therefore breeding methods are essentially the same as those used for wheat and oats.

The first step in developing an improved variety is choosing the parents to be used in crossing.

The U. S. Regional Soybean Laboratory, with headquarters located at the University of Illinois, has a "Germ Plasm Bank" of about 3,000 strains collected mainly from Manchuria, China, and Japan. Most of these strains are poor in general agronomic desirability, but many have some outstanding trait, such as disease resistance or high oil content, that breeders can use in crosses to improve soybean strains for commercial growing. These plant introductions are evaluated and made available to soybean breeders throughout the country.

Second Step

The next step is making the actual cross-pollination. Before natural pollination occurs, the small flower bud must be opened and the pollen-bearing stamens removed with a small pointed pair of forceps. Pollen is then applied from an open flower of another variety with which the cross is to be made. Many such pollinations are not successful, but under good conditions about one seed is obtained for every two or three hand pollinations.

Sometimes backcrossing is done in cases where it is desired to transfer such traits as disease resistance or seed coat color, which are simply inherited and easily evaluated, to an otherwise excellent variety. The variety is crossed to any strain with the desired trait, the plant that is produced is "back-crossed" to the variety, and this process is repeated for several generations.

Final Step

The final step in producing a new variety is testing, selecting, and retesting the many different strains obtained from each cross. In the second generation (F_2) following crossing, individual plants of the segregating population are selected for such traits as disease resistance, seed color, and resistance to lodging and shattering. These plants are classified into maturity groups, and the progeny of each plant is planted in a row at a location suitable for its maturity.

In the F_3 generation and again in the F_4, the best appearing plants from the best appearing rows are selected. Strains from F_3 or F_4 plants are usually sufficiently uniform for preliminary yield testing in replicated plots at several locations in the state.

In addition to agronomic evaluation, chemical evaluation is carried on concurrently so that high-yielding lines have also been evaluated from protein and oil content and other characteristics that make the variety valuable to industry.

After a year or two of testing and possible reselection, the best strains are entered in regional preliminary tests and grown at one or two locations in several states to more thoroughly evaluate their potential performance.

The best strains from the preliminary tests are entered in the regional uniform tests, which are

grown at 15 to 25 locations throughout the soybean belt.

These tests show the reaction of the strains to diverse soil, fertility, and cultural conditions, and their resistance to lodging and shattering under widely different rainfall and drought conditions. Detailed information is also obtained on resistance to diseases occurring in the various sections of the country. Testing over a wide geographical range makes it possible to select strains with wide areas of adaptation, and the relative potential performance of strains in any one area can be estimated in a shorter time.

Recommended Varieties

Strains that perform best under the varied conditions imposed by the uniform tests are considered for simultaneous increase and release by interested state experiment stations. Strains are frequently in as many as 100 tests over 3 to 6 years before being recommended to farmers.

All presently recommended soybean varieties in Illinois have undergone this method of evaluation prior to their recommendation. A report of the performance of these recommended varieties appears in Illinois Agricultural Experiment Station Circular 760.

The table, based on data from the Cooperative Crop Reporting Service, shows the percentage of the total soybean acreage in Illinois that each soybean variety occupies. Lincoln was released in 1944 and, partly because of its higher yield and superior lodging resistance, rapidly replaced other varieties of comparable maturity. Now Lincoln has been largely replaced by superior varieties more recently released.

No new variety is released for commercial production unless it has been proved, through extensive testing, to be superior in one or more characters to existing varieties it is designed to replace. It takes about 10 years to produce a soybean variety from the initial cross to the time it is made available to farmers.

Variety development has made possible the establishment and rapid expansion of the soybean as a grain crop in the Midwest. Present breeding work will aid in further expanding the crop by increasing production efficiency and reducing the threat of new diseases.

Soybeans Likely to Show Zinc Hunger in Nebraska

SOYBEANS are among the crops most likely to show zinc hunger in Nebraska, according to M. D. Weldon and Leon Chesnin of the Nebraska College of Agriculture in Nebraska Farmer.

Zinc deficiency produces a light brownish-yellow color of the leaves. Usually the older leaves are affected but at some stages of growth, new leaves may also show the characteristic light tan color. Some leaves may have small smudges of rust-red color.

Symptoms are more severe in cold, wet weather. Two or 3 weeks of warm, sunny growing weather may produce rapid recovery, new leaves being normal dark green in color, while the chlorotic leaves remain yellow. Where the deficiency is severe the crop does not recover completely and serious yield reduction may be expected.

Zinc hunger signs are likely to appear on areas where all or most of the topsoil has been removed within the past year or two.

Institute Makes Oil Survey in Tokyo

By SHIZUKA HAYASHI

Managing Director, Japanese American Soybean Institute, Nikkatsu International Bldg., No. 1, 1-Chome Yurakucho, Chiyoda-Ku, Tokyo, Japan.

A SURVEY on the consumption of soybean oil covering the whole area of the city of Tokyo has been carried out by the staff of the Japanese American Soybean Institute. The metropolis has a population now exceeding 9 million or a total of 1,944,644 households,

The so-called multistage or cluster sampling method was used in the survey. The whole Tokyo area was first divided into nine blocks. These nine blocks were divided equally into 3,400 parts, out of which 167 were chosen for the survey. The chosen areas included 1,111 households which constituted the secondary sampling unit.

About 30 school girls of one of the nutrition colleges were employed to visit every family of the 1,111 selected. A number of questions were included in the questionnaires.

The survey produced the following results:

1—To a question inquiring whether the family used any edible oil, 93.3% gave an affirmative reply, and 6.7% replied that they do not use edible oil.

It is amazing in modern civilized life there are still people who do not use edible oil at all. Out of approximately 2 million households there are more than 120,000 families who do not use edible oil, and of the whole Tokyo area approximately 700,000 do not eat oil. This fact alone indicates that more education is needed.

2—The average daily per capita consumption of oil in Tokyo was shown by our survey to be 6.84 grams. The target set forth by the Japanese government for 1959 was 9.5 grams, which indicates that the quantity of oil consumed by the whole population should be increased.

3—To a question of whether the oil is purchased by housewives who bring their own bottles or containers to be filled, about 70% replied "yes." The remaining 30% purchased in tins or bottles which were the original packages of the manufacturers.

The survey clearly indicates that there is opportunity for manufacturers to push sales in their own containers under their brand names and thus increase consumption. The purchase of oil in bulk indicates that the housewives are more or less indifferent to specific brands of oil or to the manufacturers.

4—To a question of where housewives do their buying of oil, approximately 60% indicated that they shop at grocery stores. It is surprising that only about 18% buy at the professional oil stores. This again indicates the possibility of increasing sales through the medium of proper shops.

5—To a question of how often housewives use soybean oil in their cooking, those who use it less than five times a week constituted approximately 58%, and from six to ten times a week, 33%. This indicates that utilization of oil is still comparatively small.

6—To a question of whether housewives are satisfied with prices they pay for edible oils, quite a large percentage said that the prices are high and the quality not altogether satisfactory. Increased consumption can be expected if the quality is improved and the price lowered.

Nearly all the replies to various other questions indicate the importance of further public relations activities.

The survey proved that the future prospect of soybean oil consumption in Japan definitely is promising if proper promotional activities are undertaken.

Miso Makers Protest F. M. in U. S. Beans

A RESOLUTION protesting the foreign material contained in U. S. soybeans currently being exported to Japan and urging the Japanese American Soybean Institute to see that proper steps be taken to reduce its content was adopted at the general directors' meeting of the All Japan Miso Industry Association at Tokyo May 9.

The resolution was signed by all 49 directors present. They represented all Japanese prefectures.

The resolution noted that Japanese miso makers import large quantities of U. S. soybeans every year for the manufacture of miso.

"Foreign material, including corn, morning glory seeds and split beans, which has caused trouble for many years was still included in recent shipments in large quantity," the resolution read. "Many miso manufacturers have to make an extra effort to pick it out by hand.

"Morning glory seeds, in particular, are ordered to be sorted out and burned in accordance with food and hygiene laws. The cost of removing this foreign material is quite high, beside it is a waste of valuable dollars which are so limited under the allocation system.

"We appeal to your wise consideration and request that you contact the various agencies to arrange for complete removal of foreign material."

The American Soybean Association has called the action of the Miso Association to the attention of the grain grading branch of the U. S. Department of Agriculture and private organizations interested in the export field.

THE COVER PICTURE

International Group Visits Pfizer Farm

INCLUDED in the Soybean Council-sponsored international feed symposium in May was a visit to the Chas. Pfizer & Co. agricultural research center at Terre Haute, Ind.

The cover picture shows a group studying pigs in a modern farrowing crate.

Left to right, they are: J. Jerome Thompson, Pfizer; S. J. Eelkman Rooda, edible oil and cattle feed products manufacturer, the Hague, Netherlands; Howard L. Roach, president Soybean Council of America; Dr. S. Iwema, professor of animal nutrition, Agricultural University of Wageningen, Netherlands; and Hendrick H. Garrelds, Ministry of Agriculture, the Hague.

28 Europeans Attend Feed Symposium

RECEPTION in Washington by Soybean Council for delegates to international animal feed symposium. Left to right, Antonio Corozza and Mario Scapaccino of Italy; Howard L. Roach, Soybean Council president; Aldo Landi and Romano Graziani of Italy.

TWENTY-EIGHT government officials, farm scientists and feed industry executives from 10 West European countries attended an international symposium on livestock and poultry feed which began in Washington, D. C., May 4 and ended in Peoria, Ill., a week later.

The symposium, designed to encourage greater use of U. S. feedstuffs including soybeans and soybean products in Europe, was sponsored jointly by the U. S. Department of Agriculture and the Soybean Council of America, Inc.

A part of the USDA market development program abroad, the symposium was partly financed by funds derived from sale of agricultural surpluses under P. L. 480.

Howard L. Roach, president of the Council, was active in setting up and operating the program. John I. Kross, Foreign Agricultural Service, USDA, was chairman of the Washington part of the symposium.

Countries represented included Belgium, Denmark, United Kingdom, France, West Germany, Italy, the Netherlands, Norway, Portugal, and Switzerland.

The itinerary of the group included Purdue University, Lafayette, Ind.; Chas. Pfizer & Co. agricultural research center, Terre Haute, Ind.; American Feed Manuafcturers Association convention, Chicago, Ill.; Chicago Board of Trade, Chicago; and USDA Agricultural Research Service Laboratory, Peoria, Ill.

During the part of the symposium held at the Pfizer farm, Dr. William Sherman, Pfizer animal nutrition research head, told the group, "Practical feeds of the future will offer farmers more efficient use of amino acids for improved scientific feeding of poultry and livestock."

The Pfizer scientist stressed the importance of seeking better amino acid balance and levels in animal feeds.

Interest in amino acids varies around the world, said Sherman, depending on the protein ingredients and grains available for feed manufacturing. In the United States, where soybean oil meal and corn are in abundance, the major commercial interest now lies with the use of methionine in broiler rations and in both lysine and methionine for turkey feeding.

But in many countries where soybean oil meal is not produced or available in sufficient quantities for feed manufacturing, Dr. Sherman commented, lysine is the amino acid most likely to be insufficient for normal growth and development.

J. Jerome Thompson, Pfizer vice president and general manager of its agricultural division, stated that the most important goal in the lives of nearly half the world's population today is getting enough food. He urged the representatives from the 12 countries abroad to assume leadership in their nations "to see that feed is utilized to the maximum" as a major instrument of peace and freedom.

In commenting on the symposium, Mr. Thompson hailed it as of world significance in the light of President Eisenhower's "Food for Peace" drive. He said one of the purposes of the symposium was to acquaint European agricultural leaders more fully with U. S. practices in animal and poultry nutrition.

Meatier Hogs Produced By Higher Protein Level

A HIGHER PROTEIN level in the feed can produce a meatier hog, Animal Husbandman Virgil Hays told the Swine Production Conference at Iowa State College.

The fact has been known for some time, he said, but it hasn't been much used because of the high price of protein and the fact that the premium for meaty hogs was not large.

With increasing interest, prospect of better income from meaty hogs, and the plentiful supply of soybean meal, this method of feeding for meaty hogs may be adopted by some swine producers, Hays suggested, as a supplement to their breeding programs aimed at meatiness.

The Iowa researchers, he said, tested two different levels of protein in the ration to find their relation to percent of lean cuts in the carcasses of animals fed on the different rations.

The high-protein ration provided 20% protein for pigs up to 50 pounds weight, 18% up to 125 pounds weight and 16% to market weight at about 200 pounds. The low level ration provided 14% protein rations up to 50 pounds, 12 to 125 pounds and 10 to market weight.

No Nematodes Uncovered By Minnesota Survey

TWO YEARS of survey work in Minnesota have not revealed any infestation of the soybean cyst nematode in that state, Robert Flaskerd, survey entomologist, reports.

In 1957, 18 counties were surveyed with 97 soil samples taken. In 1958, 21 counties were surveyed and a total of 281 soil samples taken. All samples were negative both years.

Due to the seriousness of the pest and the large acreage of soybeans grown in Minnesota it is planned to continue the survey during the 1959 growing season.

Arkansas Studies Favor Narrow Rows

RESULTS from Arkansas studies confirm earlier observations that soybeans grown in row widths narrower than the conventional 36 to 42 inches will on occasion produce higher yields than those in wider rows.

Where such increases occur they are most likely to be found in the narrowest row widths, such as the 10-inch and 7-inch widths used in the 1956 and 1957 studies at Marianna, Ark. Soybeans in these narrower rows probably shade the soil earlier than those grown in wider rows, thus reducing weed competition and the resultant loss in yield.

Under certain circumstances, decreases in yield may occur with narrow row widths.

The results from use of herbicides in the Arkansas studies, and especially of pre-emergence herbicides, are variable. The newer herbicides (NPA, PCP, and CDAA) used in 1958 studies show sufficient promise to warrant further testing on narrow rows. Early post-emergence applications of the alkanolamine salt of DNBP to soybeans also look very promising.

The studies indicate that the technique of growing soybeans in narrow rows in conjunction with herbicides has merit in lowering production requirements for cultivation while maintaining and even increasing yields. But certain factors will need further study before definite recommendations can be made.

Effect on Soybean Yields of Herbicide and Narrow Row Width Combinations. Report Series 84, April 1959. By R. E. Frans. University of Arkansas, Fayetteville, Ark.

Use of Fertilizers Can Be Profitable in Arkansas

MANY ARKANSAS farmers have been giving consideration to the fertility needs of soybeans due to the crop's growing importance in the state.

Recent research by the Arkansas Agricultural Experiment Station indicates that the fertilization of soybeans can be very profitable. Responses of 2 to 10 bushels in research plots have been primarily obtained on terrace soils testing low in available phosphate and potash.

On the rice prairie many farmers fertilize soybeans in rotation with rice. Since phosphate applied to rice usually stimulates growth of rice field grass and weeds, farmers practice applying the phosphate to other crops in rotation. The phosphate left over from these crops is used by rice. Often soybeans are fertilized for this purpose even though in some cases the expected yield response is small.

Results from using the recommended rate of fertilizer have varied widely.

There is considerable interest as to whether nitrogen will profitably increase soybean yields. In very few cases have tests showed enough response to nitrogen to generally justify it in fertilizer recommendations.

Where responses to nitrogen have been observed, they have usually been on fields testing very low in organic matter or where small grain straw was turned under immediately before soybeans were planted.

Where soils test medium to high in potash as is the case in most Mississippi River Delta soils, little or no response can be expected from fertilizer.

Low Soybean Yields? Right Fertilizer May Help. By Don Adams and Woody Miley. Arkansas Farmer, April 1959.

Most Commercial Acreage In Texas on High Plains

SOYBEANS CAN be grown in all irrigated sections of Texas, but most of the commercial acreage harvested for seed is on the High Plains.

Although profitable yields have been produced in some seasons under dryland conditions on bottomland soils of the Red River Valley and in the eastern part of the Coast Prairie, yields over a period of years have been so inconsistent the crop has not been grown widely.

Elsewhere in the state, where supplemental irrigation is not provided, yields are too low or inconsistent for profitable production.

Lee, Ogden, Dorman, Jackson and Improved Pelican are recommended varieties.

In general, Texas farmers tend to plant soybeans too early for best results. Recommended dates are between May 15 and June 15, depending on location.

Soybeans. L-411. By R. J. Hodges and R. D. Staten. Texas Agricultural Extension Service, College Station, Tex.

Weed Control Trials On Peat in Florida

SEVERAL CHEMICALS are potentially good herbicides for pre-emergence use with soybeans on the peat soils of Zellwood, Fla.

Experiment station trials indicate that annual weeds growing on peat soils may be effectively controlled by using CDAA or CDEC at 4 to 6 pounds, EPTC at 6 to 10 pounds, or PCP at 10 to 15 pounds per acre sprayed pre-emergence to the crop.

These treatments had no effect on the yield of soybeans.

Weed Control in Soybeans Grown on Peat Soil. By W. T. Scudder. Central Florida Experiment Station, Sanford, Fla. Proceedings, Twelfth Annual Meeting of the Southern Weed Conference. Price $3.50. W. K. Porter, Jr., secretary-treasurer, 1226 Stephens Ave., Baton Rouge, La.

Mississippi Trials of Pre-Planting Herbicides

THIRTY-ONE different materials were evaluated as pre-planting herbicides to cotton, corn, and soybeans under field conditions in 1957 and 1958 at Stoneville, Miss.

In 1957, 14 materials gave ade-

quate weed control, but in 1958, under more adverse conditions, only EPTC gave adequate control.

In 1957, the more promising materials caused from none to moderate injury of the three crop plants. In 1958, only EPTC and diuron caused any appreciable injury to cotton and soybeans, but many of the materials were injurious to corn.

Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans. By S. W. Bingham and C. G. McWhorter. Delta Branch Experiment Station, Stoneville, Miss. Proceedings, Twelfth Annual Meeting of the Southern Weed Conference. Price $3.50. W. K. Porter, Jr., secretary-treasurer, 1226 Stephens Ave., Baton Rouge, La.

Soybeans Grown in 25 N. Dak. Counties in '58

TWENTY-FIVE North Dakota counties reported some soybean production in 1958. Though the number of counties reporting production was smaller than the 29 that reported in 1957, total production was greater in 1958—3,672,000 bushels as compared with 3,312,000 in 1957.

Though some production was reported from all sections of the state, the main concentration was in the east central and southeast districts, particularly in the four counties of Richland, Cass, Traill and Grand Forks.

Richland produced almost 2 million bushels and Cass over 1 million in 1958.

Only a few bushels were reported from western and north central districts.

North Dakota Crop and Livestock Statistics 1958. North Dakota Crop and Livestock Reporting Service, Box 31, Fargo, N. Dak.

Miscellaneous

Soybeans Tested for Production in Hill Sections. By G. D. Green, J. F. O'Kelly, S. P. Crockett, B. C. Hurt, and L. B. Walton. Mississippi Farm Research, March 1959. Agricultural Experiment Station, State College, Miss.

FEEDING

Ohio Trials of Meal Fed Free Choice to Pigs

RECOMMENDATIONS for feeding soybean oil meal to growing-finishing pigs on pasture have been based on results that showed that pigs ate too much of the meal when it was fed free choice. These results were obtained with the use of Expeller processed meal.

But the meal available for swine feed at present is mostly solvent extracted meal. Preliminary observations where solvent extracted meal was fed free choice with shelled corn and minerals on pasture indicated that past recommendations may not be applicable under present day feeding practices.

In a recent Ohio trial the solvent extracted meal fed free choice was consumed in more than sufficient quantities by at least one of eight groups of pigs, but not in such quantity as to cause a great increase in the feed cost per hundred pounds of gain. The authors say more trials with different brands of solvent extracted meal and different types of corn should be conducted.

Methods of Feeding Soybean Meal as a Supplement to Corn for Growing Pigs on Pasture. By R. F. Wilson and A. W. Jordan. An. Sci. Mimeo. No. 112, September 1958. Ohio Agricultural Experiment Station, Wooster, Ohio.

Cooperate in Control of Soybean Diseases

DEVELOPING disease-resistant soybean varieties is the most economical approach to the soybean disease problem for the Illinois grower, USDA plant pathologist D. W. Chamberlain told a 1959 Farm and Home Festival audience at Urbana, Ill.

Soybeans simply do not return enough profit per acre to make expensive field treatments practical. A continuing search is therefore under way to find sources of resistance to major soybean diseases.

The U. S. Regional Soybean Laboratory at Urbana has sponsored a disease-control program since 1943, Chamberlain related. This program parcels out the work of finding sources of resistance and then transferring the resistance to field varieties among several state agricultural experiment stations. The Regional Laboratory coordinates the efforts of the state experiment stations.

This cooperative arrangement has already found sources of resistance to more than half a dozen major soybean diseases, Chamberlain said. The Illinois Agricultural Experiment Station has found sources of resistance to soybean bacterial blight. Other states have located sources of resistance to other potentially dangerous diseases.

Once resistance to some soybean disease is found, it may take as long as 10 years to combine the resistance with a useful field variety. This long-term effort is now well under way at the cooperating experiment stations.

Chamberlain cautioned that, although soybean diseases are not yet extremely destructive, they are potentially dangerous. If the diseases do begin to cut into future soybean production, the resistant varieties should be ready for field use in time to prevent any large losses.

Use of Fats in Soaps, Drying Oils Declines

BECAUSE manufacturers of soap and drying oil products are using smaller quantities of fats and oils than formerly, nonfood uses of fats and oils are declining, continuing a trend that has been in progress for several years, according to Agricultural Marketing Service.

Reduction continued in 1958, as synthetic detergents again commanded more of the soap market and low-fat or nonfat products continued to replace drying oils in the manufacture of paints, varnishes and lacquers. Part of the decline in 1958 was caused by reduced industrial activity in that year.

Fats and oils used in soap per person in 1958 was 5.3 pounds, a little over half a pound less than was used for this purpose in 1957 and the lowest of record. Consumption of fats and oils in drying oil products in 1958 was 5.2 pounds per person, four-fifths of a pound below 1957 and the lowest since the 1930's. Other industrial uses amounted to 11.6 pounds per person in 1958, three-tenths of a pound above 1957 and a new record.

Use of fats and oils in soap will probably continue to decline in 1959 because of increased consumption of synthetic detergents, according to AMS. Drying oils will meet greater competition from nonfat products though increased industrial production will help maintain consumption. But other industrial outlets are expected to take more fats and oils than in past years, mainly because of the expected greater use of fats in animal feeds.

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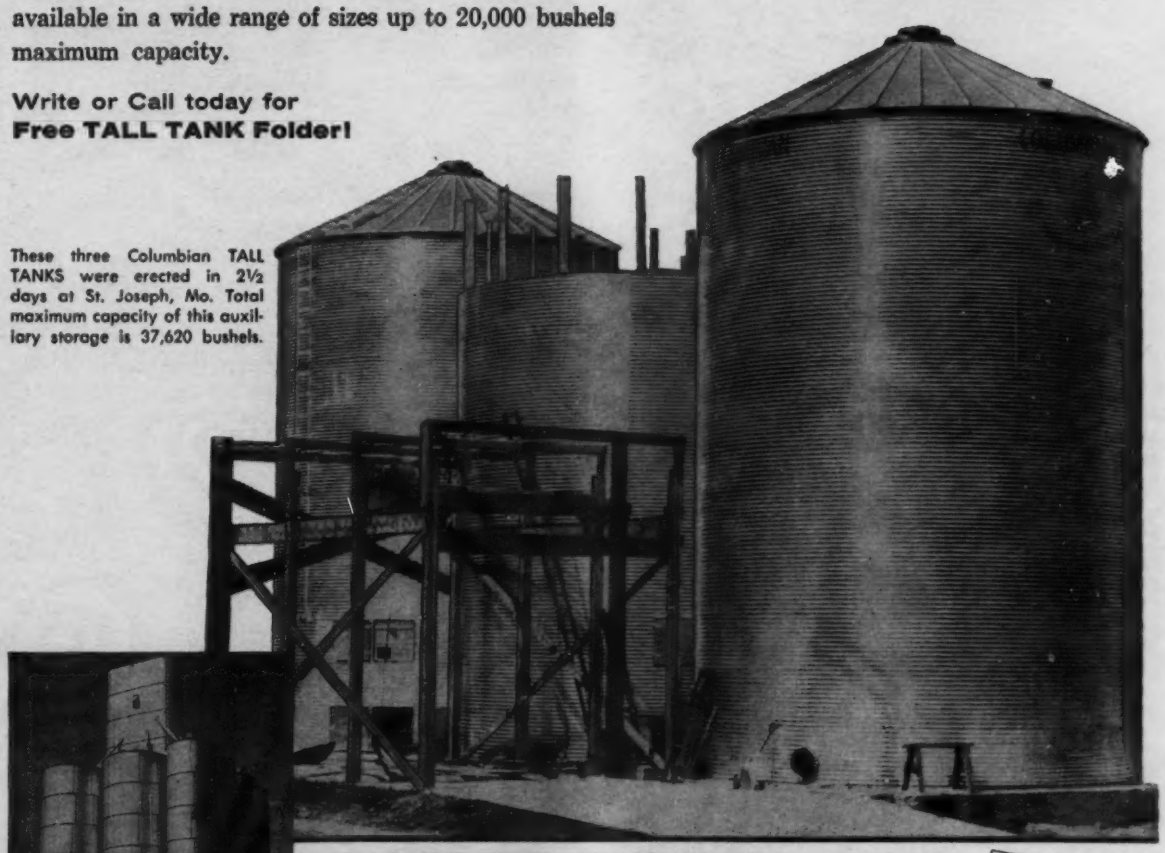

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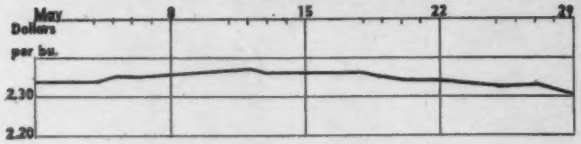
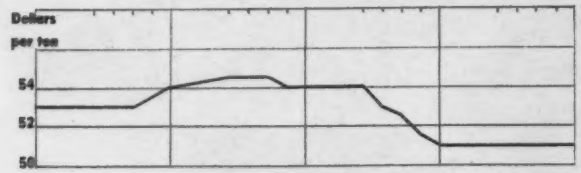
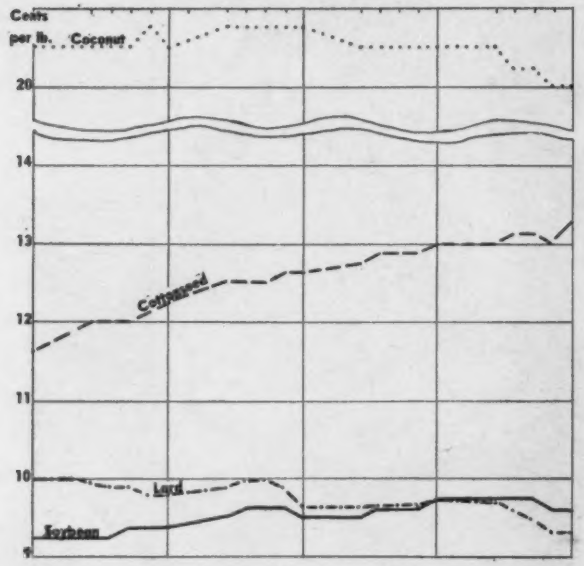
DAILY MARKET PRICES
No. 1 Cash Soybeans, Chicago



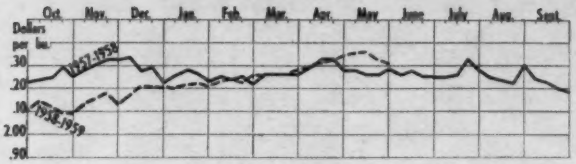
Bulk Soybean Oil Meal, Decatur



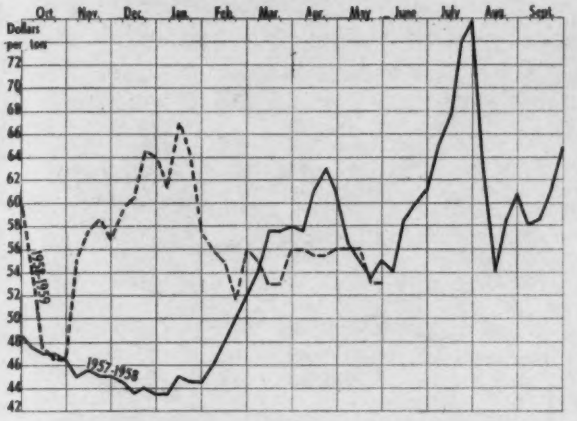
Crude Vegetable Oils and Lard



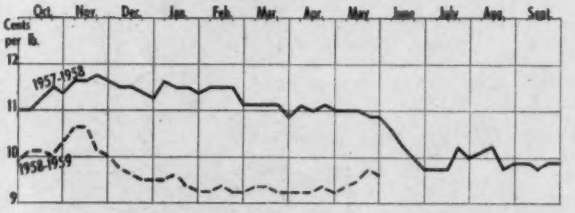
TRENDS AT A GLANCE (Weekly Close)
No. 1 Cash Soybeans, Chicago



Bulk Soybean Oil Meal, Decatur



Crude Soybean Oil, Tankcars



May Markets

THOUGH THERE was little net change in the cash soybean market in May, beans reached the highest level of the past 2 marketing years at midmonth. Meal and oil remained below year ago levels with a resulting squeeze on processor margins.

Meal lost $3.50 during May and oil gained ½¢ to reach the highest level so far this marketing year.

Buoying the soybean market were continued heavy crushings and stepped up exports—soybean exports were running 14 million bushels ahead of a year ago by month's end, and oil was moving out at a fast clip.

Day to day factors in the markets included reported cutbacks in processor operations—not so far borne out by statistical reports—and varying opinions on the prospective soybean acreage.

A bullish factor was an estimate that the carryover of soybeans into the next marketing year may be as low as 65 million bushels, only two-thirds of early estimates.

The meal market was weakened by slower demand for mixed feeds due in part to low egg prices and curtailment of poultry feeding programs.

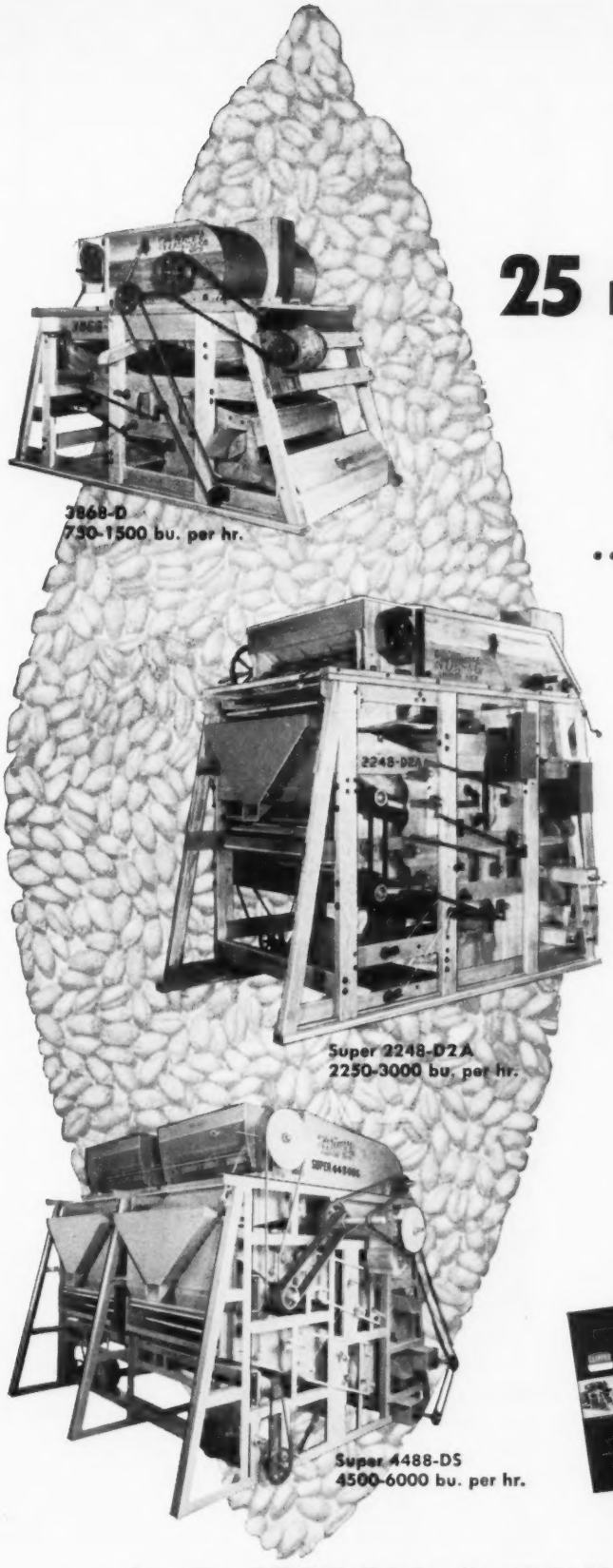
Other factors in the market were the volume of soybeans under loan, the nearness of the takeover by Commodity Credit Corp. and the probable offering of takeover beans by CCC.

BYPRODUCTS. The price of soybean fatty acids remained at 15¾¢ per pound during May. Acid soybean soap stock remained at 6¢, and raw soybean soap stock advanced from 1¾¢ to 2¼¢ per pound.

1957 AND 1958 SOYBEAN CROPS

	1958-59	1957-58
Total soybeans placed under price support as of Apr. 30	139,996,000 bu.	90,454,972 bu.*
Total soybeans withdrawn from support as of Apr. 30	15,209,000 bu.	7,815,301 bu.*
Total remaining under support Apr. 30	124,412,000 bu.	82,639,671 bu.*
Soybeans crushed Oct. 1-Apr. 30	242,690,000 bu.	206,250,000 bu.
Exported Oct. 1-Apr. 30	68,277,000 bu.	59,231,000 bu.
Balance on hand May 1 for processing, export or carryover	253,529,000 bu.	194,131,000 bu.
Total soybeans inspected for overseas exports plus lake shipments to Canada Oct. 1-May 22	77,016,513 bu.	63,140,624 bu.

* Apr. 15



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Stixrood Head of New Neptune Meter Division

D. C. Stixrood, president of **Hot Spot Detector, Inc.,** Des Moines, Iowa, has been named head of the new electronics division of Neptune Meter Co., W. E. Cochrane, Neptune president, announces.

Hot Spot, Revere Corp. of America, Wallingford, Conn., and Electronic Signal Co., New York, all wholly owned Neptune subsidiaries, are the manufacturing and marketing organizations that comprise the new division. In addition to his duties as president of Hot Spot, Stixrood recently became president of Revere Corp.


D. C. Stixrood

Neptune officials stated the new divisional setup will consolidate and strengthen marketing and management functions within the organization. Creation of the division will bring about even closer cooperation between the three electronic subsidiaries of Neptune.

Two Vice Presidents Elected by K. C. Firm

The election of two new vice presidents of **Black, Sivalls & Bryson, Inc.,** Kansas City, Mo., oilseed equipment and steel products manufacturer, has been announced by Kenneth W. Lineberry, president.


M. G. Purpus


Newton D. Baker

Newton D. Baker has been elected to the newly created post of marketing vice president. He will participate in the review and analysis of marketing operations in all divisions, and assist division sales managers with sales training and sales planning programs. He will also continue his responsibility for all advertising, sales promotion and public relations activities.

Baker joined BS&B in 1950 as assistant advertising manager. He became director of employee and public relations in 1958.

M. G. Purpus has been elected vice president and manager of steel products sales. Purpus came to BS&B in 1951 and shortly became sales manager of the steel products division, was later elected vice president of BS&B International.

Chicago Changes Made By Central Soya Co.


A. H. Anders


Richard Burket

The promotion of A. H. Anders to the newly created position of manager of the Chicago grain division office, effective July 1, has been announced by **Central Soya Co., Inc.,** Fort Wayne, Ind.

Anders is currently manager of the company's Minneapolis office, where he will be succeeded by Richard Burket, the present assistant manager.

The grain operation formerly carried on by Central Soya's chemurgy division at the Laramie Ave. plant will be consolidated with this new grain division office. The Chicago operation will then consist of oil sales under Mrs. Madeline Kinney, the clearing operation under Donald O. Cuthbert, and the cash operation under A. H. Anders.

Blaw-Knox Division Promotes Armin Jensen

Blaw-Knox Co. chemical plants division, Pittsburgh, Pa., announces the promotion of Armin Jensen to the position of technical service representative for the solvent extraction industry. In his new position he will serve as consultant on problems associated with equipment selection, production methods, and system performance.


Armin Jensen

Mr. Jensen has been associated with fats and oils work in many foreign countries as well as the United States. He joined Blaw-Knox in 1943 as process and field engineer.

O'Cone Joins Staley Oil Sales Group

Philip M. O'Cone has joined the **A. E. Staley Manufacturing Co.'s** refined oil sales organization as a salesman in the New York branch office area. He has been a floor broker on the New York produce exchange for the past 2 years.


Philip M. O'Cone

D. F. Rentshler, manager of the company's refined oil department, said the move is in line with increased volume and potentials for refined oil sales in the area. Robert D. Stain is manager for refined oil sales at the New York office.

C. G. Henry, Memphis, former manager of Midsouth Cotton Growers' Association and a leader in fighting for margarine died recently at the age of 85.

Purcell Seed Co. Bought By Spencer Kellogg Co.

Purcell Seed Co., Evansville, Ind., has been acquired by **Spencer Kellogg & Sons, Inc.,** Buffalo, N. Y.

The Purcell organization will be under the jurisdiction of the East St. Louis mill of Spencer Kellogg's Staley Milling Co. division.

Joseph A. Cooper, divisional vice president in charge of the East St. Louis plant, becomes president of the Purcell organization. James A. Purcell becomes vice president of the reorganized firm.

Purcell was the first to install pelleting equipment in its area, and manufactured and distributed one of the first all-purpose poultry rations in the states it serves, according to Thomas W. Staley, divisional president.

The business of the Staley Milling Co., Kansas City, Mo., was acquired last year by Spencer Kellogg & Sons, Inc., and now operates as a division of the latter firm.

Tarrant to New Midwest Post of Spencer Kellogg

Spencer Kellogg & Sons, Inc., have appointed John M. Tarrant, Jr., to the newly created post of Midwest area sales manager.

Mr. Tarrant for several years has been engaged in oil sales work in the Chicago territory for Kelloggs. His new position will involve supervisory and selling responsibilities in a number of Midwestern cities.

John M. Tarrant, Jr.

He came with Kelloggs in 1948 and in March 1955 was made assistant district sales manager of the Chicago market.

Toyomenka, Inc., announces the removal of its New York offices to 2 Broadway, New York 4, N. Y.

The appointment of Richard F. Heine as manager of product marketing has been announced by McMillen Feed Mills, the feed division of **Central Soya Co., Inc.,** Fort Wayne, Ind. He will be responsible for developing and maintaining markets for meat, milk and eggs. Prior to joining McMillen Feed Mills, he was president of Sherman White & Co., Fort Wayne.

A 1-million-bushel expansion of its country elevator grain storage facilities in Minnesota was announced by **Archer-Daniels-Midland Co.** L. J. Weidt, manager of ADM's Commander elevators, said the expansion program will include additions to 20 of the company's 38 country elevators in the state.

Eugene E. Woolley, who has served as director of production for the flour division of **General Mills** since 1956, has been named general manager of the company's feed division. He succeeds David H. McVey, who resigned in March to practice tax law in Minneapolis.

Appointment of David J. Hopkins as administrative manager of its formula feeds department was recently announced by the **A. E. Staley Manufacturing Co.,** Decatur, Ill. E. E. Rhodes, manager of the company's soybean division, said Hopkins will supervise procurement and inventories, order handling, dealer counseling and coordination with manufacturing and other departments in his new position. Hopkins has been grain buyer in the grain division.

The RCH Electric Co., wholly owned subsidiary of the **Riechman Crosby Hays Co.,** Memphis, Tenn., held a "Pageant of Controls" of the Allen-Bradley Co., Milwaukee, Wis., at the Memphis firm's office recently. About $20,000 worth of working models of equipment and advancement in control engineering was on display.

Alfred A. Apfel has joined the investment firm of **Bache & Co.** and will serve as the commodity specialist at the firm's Cincinnati, Ohio, office. He was formerly with Continental Grain Co. in that company's St. Louis office. Bache & Co. holds memberships in all principal securities and commodity exchanges in the United States.

Hugh A. Hamilton, production manager of chemical market research at **General Mills'** central research laboratories, and Dr. Harold A. Wittcoff, the laboratories' director of chemical research, are co-authors of a chapter, "Applications of Fatty Acids in Industrial Coatings," in a new book on fatty acids. Entitled Industrial Fatty Acids in Industrial Coatings, the volume, edited by E. Scott Pattison, manager of the Fatty Acids Council, is being published by Reinhold Publishing Corp., New York.

The 33rd annual fall meeting of the **American Oil Chemists' Society** will be held in Los Angeles, Calif., Sept. 28-30. Chairman of the meeting will be H. C. Bennett of the Los Angeles Soap Co.

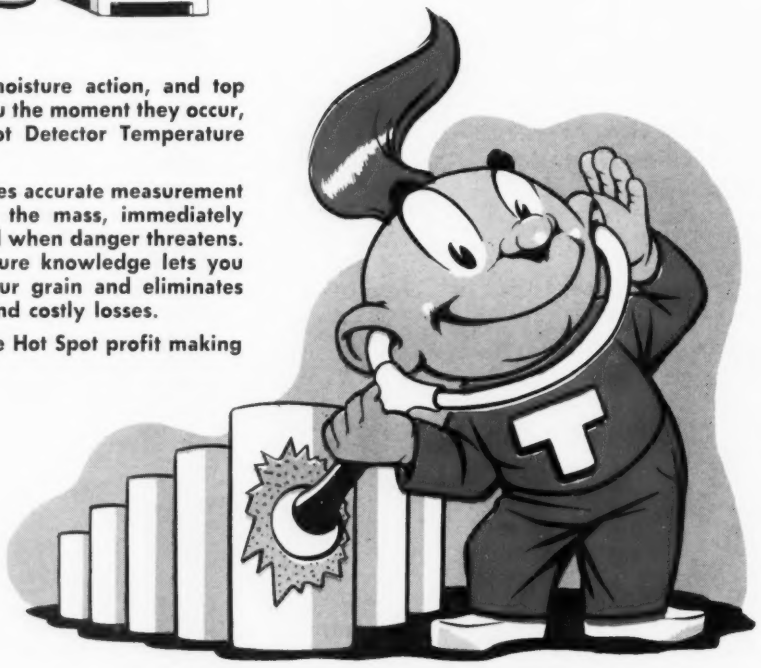
Thermy* says:

"I'll let you know the exact condition of your grain—any time you ask!"

Insect invasion, mold or moisture action, and top sweating are reported to you the moment they occur, when you have a Hot Spot Detector Temperature System on the job.

That is because Hot Spot gives accurate measurement of temperature throughout the mass, immediately alert to warn you where and when danger threatens. Hot Spot Detector temperature knowledge lets you control the condition of your grain and eliminates guesswork, needless risk, and costly losses.

Write today for the complete Hot Spot profit making story.



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NEW PRODUCTS and SERVICES

SCALPING SHOE. A new large capacity scalping shoe has been introduced by the J. W. Hance Manufacturing Co. The new unit was designed for rapid scalping and rough cleaning of soybeans and other products.

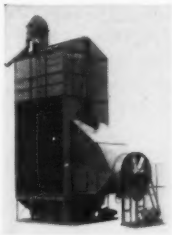
Standard model is equipped with two screens. Top screen separates large pods, sticks, stems and leaves. It is equipped with adjustable vibrators that strike special plastic bumpers. Vibrators eliminate screen clogging and improve screen action and capacity.

Lower screen is equipped with vibrators that strike screen from bottom to eliminate lower screen clogging and to increase screening efficiency. This screen removes fine dirt and damaged grains. Screen size of 36 inches by 42 inches results in a capacity range of 200 to 350 bushels per hour. A large number of different screens can be provided.

Use of the unit will improve the quality of the grain or seed being processed and will permit easier storing and handling.

For further information write Soybean Digest 6b, Hudson, Iowa.

GRAIN DRIER. An entirely new drier size has been added to Shanzer Manufacturing Co.'s line of grain drying equipment. Designated the Model 18, it is said to have been specifically designed for the elevator operator who needs good capacity, but prefers batch-bin operation.



The new model has completed exhaustive operational tests in the Midwest and is now in full production at Shanzer's San Francisco home plant.

Listed among the Model 18's features are: high capacity recirculating equipment, with a 650-bushel holding capacity; narrow, screen-column design which the manufacturer states is exclusive on their driers; overload protection; automatic controls; and a variable speed discharge mechanism.

For a color folder giving complete information on the Model 18, write Soybean Digest 6a, Hudson, Iowa.

WASHINGTON DIGEST

1959 a Boom Year for Soybean Usage

By PORTER M. HEDGE
Washington Correspondent for The Soybean Digest

THIS IS A boom year for soybeans in all their major uses. Exports of beans may total around 100 million bushels. Production of soybean meal is calculated at 9.4 million tons this season, with 8.9 million tons being used for feed.

Nearly 6½ million tons of the five major oilseed meals were fed during the first half of the current marketing year, the Agricultural Marketing Service of USDA has just reported. This is 822,000 tons more than fed during the same period last season.

Most of the increase was in soybean meal. Tonnage of soybean meal fed came to 4,566,000 during the first half of the year—up 714,000 from the 1957-58 season.

Production of soybean meal during the first half of the year is up 845,000 tons. Output is up more than the increase in volume fed since stocks are slightly larger, and exports have increased 60% over 1957-58. October-March exports are 290,000 tons against 180,000 last year.

Some seasonal tapering off in the quantities fed is expected during the last half of the marketing year, though soybean meal use is expected to remain high—an estimated 4,334,000 tons during the period. Here are the first half figures for the major oilseed meals and preliminary estimates for the 1958-59 marketing year:

OCTOBER-MARCH 1958-59

Type of meal	Production	Total supply including stocks	Use for feed
	in thousands of tons		
Soybean	4,916	4,964	4,566
Cottonseed	1,567	1,725	1,553
Linseed	233	261	240
Peanut	37	39	35
Copra	52	70	69
Totals	6,805	7,059	6,463

OCTOBER-SEPTEMBER 1958-59

Soybean	9,400	9,448	8,900
Cottonseed	2,200	2,396	2,200
Linseed	500	536	485
Peanut	75	77	75
Copra	100	131	130
Totals	12,275	12,588	11,790

The estimate of total use of oilseed cake and meals for the current year is 1,044,000 tons above the total last season, and an alltime high.

A large volume of meal will be needed in the immediate future years if projections by USDA mean anything. Cattle numbers are on a rapid rise—faster than growth in the U. S. population.

Projections of numbers at assumed rates of increase—continued rapid expansion or a slower expansion—indicate more than 101 million head of cattle in 1960, to a possible 110 million to 115 million 5 years later.

While hog numbers are increasing and prices are generally on a lower scale, feeding ratios are still favorable. Continued high rate of hog production is anticipated as long as low cost feed is available in substantial quantities.

Poultry numbers will continue large regardless of low egg prices now. USDA estimates poultry this year will use close to 4 million tons of soybean meal. The estimate made early in the season is 3,868,000 tons for poultry alone.

CCC Takeover

Latest Agricultural Marketing Service estimates are that about 75 million bushels of soybeans now under loan were taken over by Commodity Credit Corp. at the time loans matured June 1.

The end of April CCC report on beans under loan showed: 125,840,937 bushels under farm and warehouse loans, with 14,155,241 bushels under purchase agreements. Out of this total, loans on 15,208,588 bushels had been repaid; 373,911 bushels had been delivered.

Most of the repayments were in these states: Arkansas 4,316,457 bushels; Illinois 1,663,112 bushels; Iowa 1,181,673 bushels; Minnesota 873,108 bushels; Mississippi 1,107,234 bushels; Missouri 3,151,889 bushels.

Through April soybean growers had resealed 1,719 bushels of soybeans to be carried on farms for another season.

The estimate of crush now is 400 million bushels, indicating a carryover next October of around 65 million bushels. Of the ending stocks, 5 to 10 million bushels are expected to be in commercial hands, the balance in CCC stocks.

Since prices in recent weeks have been above support level, either some of the beans taken over by CCC would move back into commercial channels this summer for crushing, or the takeover by CCC will be smaller than now anticipated.

Exports of beans during the first

half of this marketing year totaled 60,776,651 bushels, and the movement has been good. Reasons given for this by USDA officials are:

The big increase in shipments to Japan—some 5 million bushels more than expected earlier—due to smaller supplies from China.

The shortage of coconut oil and copra from the Philippines and other Far Eastern sources this year has kept prices high and held down normal imports into Western Europe. This deficiency is being filled to at least some extent with more soybeans.

Western Europe also last year reduced its stocks of edible oils. If it is going to maintain the consumption level to that of recent years more has to be imported.

Bad weather has hurt crops seriously in Argentina and Uruguay, creating demand for additional edible oils. Uruguay has lost half its sunflower seed crop because of recent floods, the Foreign Agricultural Service reports.

Even with a big movement of edible oils Foreign Agricultural Service is lowering its published estimate of probable edible oil exports under P. L. 480 this marketing year to a range of 1.4 to 1.5 billion pounds. Earlier, the estimate had been 1.5 billion. Though this may still be reached, oil authorizations haven't been picked up as rapidly as FAS would like to see them.

All of the cottonseed oil CCC took over last winter has been sold for dollars—in the neighborhood of 140 million pounds. The estimate of cottonseed oil shipments—400 million pounds—still stands. That for soybean oil exports is put within the range of 1 billion to 1.1 billion pounds.

Nematode Control

The House-approved budget authorization for the Department of Agriculture contained $152,900 additional funds for control of the soybean cyst nematode. The nematode is now in 22 counties in these states: Arkansas, Kentucky, Mississippi, Missouri, North Carolina, Tennessee, and Virginia.

During the hearings, Dr. M. R. Clarkson, deputy Agricultural Research Administration administrator in charge of regulatory programs, testified:

"We have new methods under test in an effort to destroy the nematode in the infested fields. Preliminary laboratory studies show that with methyl bromide, DD, and perhaps some other soil fumigants, there is a possibility of destroying all the nematodes in an infested field. We need further trials on a field basis."

Dr. Clarkson said surveys in the last 2 years show some spread beyond the area previously known, but in most instances this appears to have occurred before regulations were applied.

"If methods that we are now working on should prove to be successful," he said, "I should think it would take an additional 5 years to get rid of it (the nematode). It is a rather expensive method. I cannot estimate right now, but it would call for fumigating every acre of soil that is now infested; namely, 20,000 acres."

IN THE MARKETS

P.L. 480 EXPORTS. Exports under Title I of Public Law 480 in the second quarter of the 1958-59 marketing year (January-March 1959) were 116 million pounds, compared with 169 million in the first quarter, USDA reports. Program exports for the first and second quarters of the 1957-58 marketing year were 35 and 76 million pounds, respectively.

Total U. S. exports of edible oils and lard in the first half of the current marketing year totaled 745 million pounds, an increase of 161 million pounds over the corresponding period in 1957-58. Of the total 485 million pounds of edible oils (cottonseed and soybean) exported in October-March period of this marketing year, 60% was under Title I of Public Law 480.

Cottonseed and soybean oils and lard: Exports under Title I Public Law 480 programs, and total exports, October 1954-March 1959 (million lbs.)

	Oct. 1-Sept. 30			Oct. 1-Mar. 31		
	1954-55	1955-56	1956-57	1957-58	1957-58	1958-59
Exports under P. L. 480:						
Cottonseed	117	291	55	97	47	2
Soybean	.....	279	495	592	61	283
Total oils	117	570	550	689	108	285
Lard	.....	112	65	3	3	.....
Total exports:						
Cottonseed	[1]710	[1]611	423	248	180	[3]105
Soybean	50	557	807	803	221	[3]380
Total oils	760	1,168	1,230	1,051	401	485
Lard[2]	528	663	530	394	183	[3]260

[1] Includes foreign donations under Section 416 Title III, Public Law 480. [2]Revised to exclude shipments to U. S. territories. [3]March exports estimated.

From the beginning of the Title I program through Apr. 30, 1959, authorizations totaling about $493 million (including some ocean transportation costs) were issued for fats and oils. The breakdown by commodities follows: soybean or cottonseed oil, $407 million; soybean or cottonseed oil or lard, $42 million; lard, $26 million; tallow or grease and other oils, $19 million.

Active purchase authorizations under which purhases had not been completed as of Apr. 30, 1959

Soybean or cottonseed oil	PA No.	Approximate quantity	Contracting authorized through
		Metric tons	
Burma	33-14	5,000	May 30, 1959
Colombia	25-27	6,800	June 30, 1959
Iceland	40-31	325	Nov. 30, 1959
Israel	16-46	8,000	May 30, 1959
Pakistan	15-40	20,000	May 30, 1959
Turkey	10-36	90,000	Aug. 31, 1959
Yugoslavia	11-23	35,000	May 30, 1959
Yugoslavia	11-31	770	May 30, 1959
Yugoslavia	11-32	4,680	May 30, 1959

Purchases of about 50,000 metric tons under the above authorizations have been reported. Programs operations division, Foreign Agricultural Service, U. S. Department of Agriculture, Washington, D. C.

Title I, P. L. 480 shipments July 1958-April 1959

	April 1959			July 1958-April 1959		
	Metric tons	Unit	Quantity	Metric tons	Unit	Quantity
Cottonseed oil	1,721	lb.	3,793,000	3,096	lb.	6,825,000
Soybean oil	17,186	lb.	37,888,000	235,034	lb.	518,161,000

MEAL, OIL EXPORTS. February exports of soybean oil cake and meal totaled 41,608 tons, value $2,746,630, reports Bureau of the Census. Over half, or 23,034 tons, went to Canada.

Exports of soybean oil, refined and further processed, except shortening, in February totaled 6,967,901 pounds, value $882,323.

LECITHIN EXPORTS. Exports of lecithin for the calendar year 1958 totaled 12,296,427 pounds valued at $1,719,915, Bureau of the Census reports.

February exports of lecithin were 935,472 pounds, value $143,920.

EXPORTS. Preliminary data on U. S. exports of soybeans and soybean oil for March 1959, with comparable data for March 1958 and cumulative totals for the marketing years 1957-58 and 1958-59, reported by Foreign Agricultural Service, U. S. Department of Agriculture.

	Unit	March 1958	March 1959	October-March 1957-58	October-March 1958-59
Soybeans	bu.	3,758,988	5,022,788	54,110,594	60,776,651
Soybean oil:					
Crude	lb.	13,049,724	30,779,712	72,193,703	136,596,531
Refined but not further processed	lb.	29,965,573	3,178,976	90,291,927	17,434,602
Refined, deodorized & hydrogenated	lb.	12,031,866	15,402,184	58,778,675	158,899,815

Soybeans: Inspections for export by coastal areas and country of destination, April 1959 (1,000 bu.)

Atlantic			
United Kingdom	291	Belgium	57
The Netherlands	510	West Germany	412
West Germany	163	Italy	180
Israel	327	Israel	496
Taiwan (Formosa)	519	Korea	335
Other	132	Japan	4,521
Subtotal	1,942	Other	430
Gulf		Subtotal	7,651
Norway	90	**Lake Ports**	
Denmark	339	Canada	286
The Netherlands	791	Grand total	9,879
		Total Jan.-Apr. 1959	30,891
		Total Jan.-Apr. 1958	20,027

Note: Data are based on weekly reports of inspections for export by licensed inspectors and do not include rail or truck movement to Canada or Mexico. In some cases the ultimate destination of the soybeans exported is not shown on the inspection reports, therefore, the quantity of each country may vary from official Census data which are based on custom declarations.

Soybeans: Inspections for export by ports and lake shipments to Canada April 1959 (1,000 bu.)

Atlantic			
Philadelphia	75	Port Allan	2,111
Baltimore	506	Subtotal	7,651
Norfolk	1,288	**Lake Ports**	
Subtotal	[1] 1,942	Toledo	286
Gulf		Subtotal	286
New Orleans	4,756	Totals	
Mobile	784	April 1959	9,879
		Jan.-April 1959	30,891
		Jan.-April 1958	20,027

Based on weekly reports of inspections for export by licensed inspectors and does not include rail and truck movement to Canada or Mexico. [1] Includes 72,975 bushels of soybeans shipped from Morehead City, N.C.

Soybeans: U. S. exports by country of destination, October-March 1958-59 and 1957-58 (1,000 bu.)

	1958-59	1957-58		1958-59	1957-58
Cuba	18	....	Italy	748	34
Canada	5,720	6,038	Israel	2,806	2,146
Mexico	227	....	Philippines	74	24
Venezuela	80	....	Korea	496	1,154
Norway	797	962	Hong Kong	104	3
Denmark	2,993	4,071	Taiwan (Formosa)	1,745	1,941
United Kingdom	1,389	3,992	Japan	19,090	14,055
Netherlands	9,822	7,004	Nansei & Nanpo Islands	30	3
Belgium & Luxembourg	2,987	1,976	Morocco	956	....
France	1,036	187	Other	7	1,898
West Germany	9,312	8,259	Total	60,774	54,111
Switzerland	337	364			

[1] Less than 500 bushels. Bureau of the Census.

Oilseed meals: Production, stocks, foreign trade and domestic disappearance (1,000 tons)

	Stocks Oct. 1[1]	Production	Imports[2]	Exports[2]	Domestic disappearance	Stocks Mar. 31[1]
	October 1958-March 1959					
Soybean	48.1	4,916.5	0	278.7	4,589.7	96.2
Cottonseed	71.2	1,566.6	92.7	4.9	1,585.8	139.8
Linseed	26.3	233.2	2.4	12.5	241.8	7.6
Copra	0.6	52.2	15.8	[3]	67.9	0.7
Peanut	1.5	37.3	0	[3]	34.6	4.2
Total	147.7	6,805.8	110.9	296.1	6,519.8	248.5
	October 1957-March 1958					
Soybean	54.7	4,071.2	0	179.6	3,864.6	81.7
Cottonseed	209.7	1,403.7	24.1	6.0	1,433.5	198.0
Linseed	63.7	247.5	1.1	5.9	262.6	43.8
Copra	0.7	59.6	33.4	[3]	93.2	0.5
Peanut	3.2	27.3	0	1.8	27.7	1.0
Total	332.0	5,809.3	58.6	193.3	5,681.6	325.0

[1]Stocks at processing plants only. [2]Partly estimated. [3]Not available. Agricultural Marketing Service.

Total grain vessel clearance of soybeans from the Port of New Orleans during the month of April was 4,282,000 bushels, compared to 1,770,000 bushels during April 1958, the New Orleans Board of Trade reports.

PROCESSING OPERATIONS. Reported by Bureau of the Census for March and April 1959.

Primary products except crude oil at crude oil mill locations: Production, shipments and transfers, and stock, April 1959-March 1959 (1,000 tons)

Products[1]	Production		Shipments and transfers		Stocks end of month	
	April 1959	March 1959	April 1959	March 1959	Apr. 30, 1959	Mar. 31, 1959
Soybean:						
Cake and meal	798.1	838.7	791.3	830.1	100.2	93.3
Millfeed (hull meal)	18.2	*16.7	16.7	*16.3	4.3	*3.4

* Revised. [1] Data on soy flour and lecithin no longer collected monthly.

Soybeans: Net receipts, crushings, and stocks at oil mills, by states, April 1959-March 1959 (1,000 tons)

	Net receipts at mills[1]		Crushed or used		Stocks at mills	
	April 1959	March 1959	April 1959	March 1959	Apr. 30, 1959	Mar. 31, 1959
U. S.	664.0	685.8	1,037.5	1,080.3	1,846.3	*2,219.8
Arkansas	2.0	1.2	31.9	29.0	78.7	108.5
Illinois	206.4	247.8	311.5	337.5	458.9	564.0
Indiana	37.2	(2)	86.1	93.6	(2)	(2)
Iowa	150.6	123.6	169.8	167.0	172.5	*191.6
Minnesota	75.6	71.2	86.2	90.3	79.9	90.5
Mississippi	4.9	8.8	45.7	36.3	112.2	153.1
Missouri	(2)	21.4	(2)	(2)	102.4	114.4
Nebraska	(2)	(2)	(2)	(2)	(2)	(2)
North Carolina	5.0	3.6	7.5	4.3	55.4	57.9
Ohio	52.9	38.1	92.9	99.8	218.3	258.3
Tennessee	47.0	83.2	95.3	101.6	242.9	291.2
All other	82.4	86.9	110.6	120.9	325.1	390.3

Note: Detail figures may not add to totals because of independent rounding. [1] Net receipts for each state are derived from the quantity of beans crushed and net change in stocks. [2] Included in "All other" to avoid disclosure of figures for individual companies. * Revised.

Soybean products: Production and stocks at oil mill locations, by states, April 1959-March 1959

	Crude oil (millions of pounds)				Cake and meal (thousands of tons)[1]			
	Production		Stocks		Production		Stocks	
	April 1959	March 1959	Apr. 30, 1959	Mar. 31, 1959	April 1959	March 1959	Apr. 30, 1959	Mar. 31, 1959
U. S.	365.6	380.8	110.4	116.8	816.3	*855.4	104.5	*96.7
Arkansas	11.0	10.1	2.0	2.2	24.3	22.4	8.1	7.2
Illinois	111.5	121.0	27.4	36.6	238.4	*262.6	33.7	*29.3
Indiana	29.7	32.5	(2)	(2)	68.5	74.0	3.3	(2)
Iowa	60.3	59.3	18.7	16.3	137.7	135.8	17.4	*15.1
Minnesota	29.9	31.3	18.0	18.8	68.4	71.7	6.7	5.6
Mississippi	16.8	13.3	6.1	5.4	35.1	27.7	10.2	6.3
Missouri	(2)	(2)	(2)	2.0	(2)	(2)	2.0	(2)
Nebraska	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
N. Carolina	2.1	1.0	0.6	0.2	5.9	3.6	1.1	0.8
Ohio	31.6	33.7	11.5	8.7	76.2	*81.3	4.7	*5.3
Tennessee	34.3	36.8	7.9	13.0	74.6	*80.6	7.2	7.5
All other	38.4	41.8	18.2	13.6	87.2	*95.7	10.1	19.6

Note: Detail figures may not add to totals because of independent rounding. [1] Includes millfeed (hull meal). [2] Included in "All other" to avoid disclosure of figures for individual companies. * Revised.

PRICE SUPPORT. Quantities of 1958-crop soybeans reported under support through April 1959, reported by Agricultural Marketing Service (bushels).

Warehouse and farm loans			Purchase agreements	
Total under loan	Quantity repaid	Quantity delivered	Quantity under agreements	Quantity delivered
125,840,937	15,208,588	373,911	14,155,241	0

Repayments on 1958-crop soybean loans increased to 15,208,588 bushels through April, compared to 6,978,075 bushels through March. Most of the repayments were in the following states: 4,316,457 in Ark.; 1,663,112 in Ill.; 1,181,673 in Iowa; 873,108 in Minn.; 1,107,234 in Miss.; and 3,151,889 in Mo.

Through April, farmers had resealed 1,719 bushels of 1958-crop soybeans. Commodity Credit Corp. reported 11,676,165 bushels of 1957-crop soybeans in inventory.

FACTORY USE VEGETABLE OILS for March 1959. Reported by Bureau of the Census.

Fats and oils production and consumption in selected products; factory and warehouse stocks: March 1959 (million pounds)

	Production	Factory consumption					
		Consumed in selected products[2]					
				Edible products			
	Crude vegetable oils, animal and fish fats	Refined vegetable oils[1]	Consumed in refining	Total	Baking or frying fats	Salad or cooking oils	Margarine	Other edible products[3]
Cottonseed oil	160.6	116.8	124.1	97.5	29.1	54.8	10.2	2.9
Soybean oil	380.8	303.8	315.2	286.0	103.5	72.7	90.8	2.4
Vegetable oil foots	20.0	.....	.....	12.9	.....	.....	.....	.....

	Factory consumption				Factory and warehouse stocks		
	Consumed in selected products[2] — Inedible products —						
	Soap	Paint or varnish	Fatty acids	Other inedible	Total	Crude	Refined
Cottonseed oil	(D)	(D)	(D)	0.3	477.2	182.7	294.5
Soybean oil	(D)	7.8	0.5	8.3	476.0	250.6	225.4
Vegetable oil foots	1.9	0.1	8.8	2.1	49.0	.....	.....

(D) Included with "other animal and vegetable fats and oils" to avoid disclosing figures for individual companies. (NA) Not available. [1] Usage of crude oils in refining (alkali or caustic washing) is shown only for major vegetable oils. Production of refined oils covers only once-refined oils. Separate data on crude and refined oils are no longer collected for oils other than those specified. Degummed soybean oil is reported as crude oil. [2]Includes hydrogenated fats (vegetable and animal) and other fats and oils "in process," (e.g. refined cottonseed oil includes stearin, hydrogenated or otherwise). [3]Includes confectioners' fat and similar products.

CANADIAN OILCAKE.

Canadian production of oilcakes and meals in 1958 continued the upward trend of recent years, as result of expanded crushing facilities, according to Foreign Agricultural Service, U. S. Department of Agriculture. Apparent domestic consumption has also risen substantially since 1950. Larger demand is due to increased livestock numbers and greater use of oilcakes and meals by the mixed feed industry.

Export of oilcakes and meals dropped sharply in 1958.

The United States has a good commercial market for soybean meal in Canada and with the current prosperity of the livestock industry there, the market is expected to continue relatively good. Canadian imports of soybean meal during the 1958-59 marketing year are expected to be about the same as 1957-58 imports of 120,000 tons.

Oilcake and meal: Canadian supply and distribution, average 1950-54 and annual 1956-58 (short tons)

	Average 1950-54	1956	1957	1958[2]
Supply:[1]				
Production	262	383	396	[3]409
Imports	37	226	186	[4]150
Total supply	299	609	582	559
Distribution:				
Exports	70	284	262	105
Domestic disappearance	229	325	320	454
Total distribution	299	609	582	559

[1] Stocks not available. [2] Preliminary. [3] Soybean meal 331, linseed 65, other 13. [4] Estimate. Compiled from official and other sources.

Preliminary estimate of high protein feed supplies available in Canada in 1958 with comparative figures for 1956 and 1957 (tons)

	1956	1957 (Revised)	1598 (Preliminary)
Linseed oil meal	38,100	35,500	48,300
Soybean oil meal	274,800	275,500	390,200
Other oil meals, gluten feed[1]	55,900	52,400	55,900
Brewers' and distillers' dried grains and malt sprouts	83,800	84,800	85,400
Total vegetable protein	452,600	448,200	579,800

[1] Other oil meals include sunflower, rapeseed, mustard seed and copra. Data on these individual items may not be published as each of these commodities is produced by less than three firms. Dominion Bureau of Statistics.

STOCKS.

Agricultural Marketing Service's commercial grain stocks reports for close of business on Friday or Saturday preceding date of report (1,000 bu.)

U. S. soybeans in store and afloat at domestic markets

Market groups	Apr. 28	May 5	May 12	May 19
Atlantic Coast	1,471	1,181	999	615
Gulf Coast	1,033	1,509	1,509	2,427
Northwestern	1,760	1,248	1,132	786
Lower Lake	12,209	11,514	11,067	10,257
East Central	5,596	5,239	5,128	5,185
West Central and Southwestern	2,544	2,533	2,472	2,384
Total current week	24,613	23,224	22,307	21,654
Total year ago	15,566	14,065	14,828	13,198
U. S. soybeans in store and afloat at Canadian markets				
Total current week	34	0	0	62
Total year ago	151	116	72	33
Total stocks in above positions				
Current week	24,647	23,224	22,307	21,716
Year ago	15,717	14,181	14,900	13,231

Primary receipts (1,000 bu.) of soybeans at important interior points for week ending:

	Apr. 24	May 1	May 8	May 15
Chicago	202	212	354	337
Indianapolis	22	34	35	29
Kansas City	41	45	25	131
Minneapolis	72	56	153	87
Omaha	55	29	44	38
Peoria	30	72	52	78
Sioux City	8	3	12	20
St. Joseph	4	6	2	—
St. Louis	6	2	—	—
Toledo	57	53	11	35
Totals	497	512	688	755
Last year	1,213	744	788	728
CCC stocks of soybeans in Chicago	820	820	820	820
Total Chicago soybean stocks	9,805	9,170	8,872	8,275

SUPPLY, DISTRIBUTION of soybeans, 1955-58, reported by Agricultural Marketing Service (1,000 bu.)

	1958-59	1957-58	1956-57	1955-56
Carryover, Oct. 1	21,083	9,897	3,731	9,949
Production	574,413	483,715	449,446	373,522
Total supply [1]	595,496	493,612	453,177	383,471
Farm use, inluding seed for season	31,000	34,000	42,000	30,000
Quantity remaining for processing, export, or carryover	564,496	459,612	411,177	353,471
Disappearance, October through Apr. 30:				
Crushed for oil or processed[2]	242,690	206,250	192,794	174,248
Exported	[3]68,277	59,231	59,782	51,153
Total	310,967	265,481	252,576	225,401
Balance on May 1 for processing, export, or carryover	253,529	194,131	158,601	128,070

[1] Imports not included because negligible. [2] No allowance is made for new-crop crushings prior to Oct. 1. [3] Estimated.

Oilseed cake and meal: Supply and distribution, United States, year beginning October, 1957-58 and 1958-59 (1,000 tons)

	Supply				Distribution	
	Stocks Oct. 1[1]	Production	Imports	Total	Feed	Other uses,[2] exports and Sept. 30 stocks
				1957	1958	
Soybean	55	8,284	1	8,340	7,962	378
Cottonseed	210	1,922	72	2,204	2,096	108
Linseed	64	435	8	507	467	40
Peanut	3	45	—	48	44	4
Copra	1	119	68	188	187	1
Total	333	10,805	149	11,287	10,756	531
				1958-59[3]		
Soybean	48	9,400	—	9,448	8,900	
Cottonseed	71	2,200	125	2,396	2,200	
Linseed	26	500	10	536	485	
Peanut	2	75	—	77	75	
Copra	1	100	30	131	130	
Total	148	12,275	165	12,588	11,790	

[1] Stocks at processors' plants. [2] Estimated quantities of soybean meal used for industrial purposes and cottonseed meal used for fertilizer on farms of cotton growers. [3] Preliminary estimates based on indications in May 1959.

PRICES.

Average prices for soybeans received by farmers, effective parity, and support rates, reported by Agricultural Marketing Service (dollars per bushel).

Average farm price			Effective parity	Av. price as percent of parity	National average price support rate		
Apr. 15, 1959	Mar. 15, 1959	Apr. 15, 1958	Apr. 15, 1959	Apr. 15, 1959	1959 crop	1958 crop	1957 crop
2.10	2.07	2.16	2.91	72	1.85	2.09	2.09

Average farm and parity prices from crop reporting board.

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